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PAIN IN CHILDBIRTH

REPORT OF THE SUBCOMMITTEE OF THE MEDICAL WOMEN'S FEDERATION*

This subcommittee was set up by the Council of the Medical Women's Federation at its meeting in Bournemouth in October, 1947. In the course of correspondence in *The Times* during August and September, 1947, one correspondent had suggested that only married women doctors with children of their own could speak with authority on the need or otherwise for anaesthetics in childbirth, and inquired whether any concerted and thorough study of the whole question had ever been undertaken. This subcommittee was set up with the object of obtaining information on that point.

Method of Investigation

At its first meeting the subcommittee concluded that it was important to collect the necessary information as quickly as possible. It was thought that this information could best be obtained by means of a questionary to married medical women. It was decided to question only those whose youngest child was not more than 10 years old. As a preliminary step, a "pilot" questionary was sent out to about 300 medical women. The subcommittee is satisfied that the questionaries were sent to a representative sample of medical women with children under 10 years. Names and addresses were supplied by members of the subcommittee and from information available at the headquarters of the Medical Women's Federation. It was felt, by sending out questionaries rather than by inviting those interested to apply for them, that a more satisfactory cross-section would be obtained of the group from which information was desired.

The questionary consisted of two parts, the first containing three general questions on relief of pain in childbirth and the second consisting of a separate sheet for each confinement on which details of childbirth and of the methods of relief given were requested.

The response to the questionary proved disappointing and only 196 replies are available for analysis. However, a great deal of valuable information has been derived from the existing replies, and the subcommittee feels that no useful purpose would be served by any extension of the present inquiry. An inquiry designed to include all medical women with children would entail sending a questionary to all medical women, since there is no means of knowing which of them are married and which of those who are married have children. The response could not be expected to be great enough to justify the expense of an extended investigation of that kind.

*The members of the subcommittee were Professor Lucas Keene and Dr. Annis Gillie (ex-officio), Miss Josephine Barnes (chairman), Dr. Barbara Bailey (hon. secretary), Dr. K. K. Conrad (medical statistician), Dr. Enid Hughes, Mrs. Handfield Jones, Dr. K. G. Lloyd-Williams, Dr. Mary Macaulay, and Miss D. Anderton Sharpe.

STATISTICAL ANALYSIS OF SOME REPLIES TO THE QUESTIONARIES

BY

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Out of approximately 300 questionaries sent to medical women, 196 replies were received, giving details of 425 confinements. Of these, 221, or approximately 52%, took place within the past five years, and 345, or approximately 81%, took place within the past ten years. Details of these are given in Table A below and also in Table VI. Of the 196 replies, two did not give details of the first delivery and one has been excluded as it occurred over 20 years ago.

Table A

Date of Birth	Number of Delivery				
	1st	2nd	3rd	4th and 5th	Total
1943–48	82	75	42	22	221
1938–43	67	40	15	2	124
Before 1938 ..	44	23	9	4	80
Total ..	193	138	66	28	425

The replies to the three general questions are analysed in Tables I, II, and III.

Table I.—Do You Consider that Relief of Pain in Childbirth is Necessary?

Yes	178	Uncertain	3
No	8	No reply	1
Sometimes	6		

Thus 184 out of 196 medical women who have had children are in favour of relief of pain in childbirth.

Table II.—After your First Confinement Did You Dread a Second?

	Type of First Confinement		
	Normal	Abnormal	Total
Yes	18 (14%)	16 (25%)	34
No	109 (83%)	42 (66%)	151
No reply ..	5	6	11
Total ..	132	64	196

Table II has been divided, for obvious reasons, into normal and abnormal first confinements. Only 14% of mothers having a normal first confinement and 25% of those having an abnormal first confinement dreaded a second.

Table III.—Did You Find that the Memory of Pain in Childbirth Faded Quickly?

Yes	131
No	61
No reply	4
Total	196

The replies to the questions on individual confinements were tabulated into tables numbered IV to XVII. Some of this material has been discarded, as will be indicated in the statistical analysis. There were two main reasons for discarding material: in some cases the information received did not appear to be relevant to the present inquiry, while in other cases the small numbers falling under each heading were inadequate for any conclusion of value to be drawn.

Tables IV and V dealt with abnormalities of pregnancy and with length of labour and reasons for induction of labour where this was performed. The material obtained was too diffuse for any useful conclusions to be drawn from it.

Tables VI and VIa deal with the method of delivery. The most notable feature is the high incidence of forceps delivery

Table VI.—Analysis of Deliveries

No. of Delivery	Normal*	Abnormal*				All Delivs.
		Forceps	Complicated Breech	Caesarean	Total Abn.	
1st ..	130	54	1	8	63	193
2nd ..	123	10	—	5	15	138
3rd ..	58	6	—	2	8	66
4th ..	21	1	—	1	2	23
5th ..	4	—	—	1	1	5
Total ..	336	71	1	17	89	425

* Twins are counted as one delivery and included in the appropriate normal or abnormal group.

Table VIa.—Analysis of 54 Forceps Deliveries in 1st Group of Table VI

Reason not stated	26
Persistent occipito-posterior	11
Uterine inertia	4
Deep transverse arrest of head	3
Foetal distress	2
On after-coming head	2
Face presentation	1
Disproportion	2
Impacted head	1
Cord round neck	1
Prolapsed haemorrhoids	1

The average age of the mothers in this group was 31½ years.

in first births, 54 out of 193, or approximately 27% (standard error (S.E.) 3.2) of first babies, being delivered with forceps. The average age of mothers in this group was 31½ years—slightly higher than the average age of mothers achieving a normal first delivery, which was 29 years. Table VIa shows an analysis of the reasons for forceps delivery, but the large number, 26, who gave no reason for the application of forceps prevents any conclusion being reached.

Table VII, which dealt with abnormalities in labour, was discarded as of no value.

Table VIII deals with the place of confinement.

Table VIII.—Analysis by Place of Confinement

Place of Confinement	Number of Delivery								Totals		
	1st		2nd		3rd		4th and 5th				
	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal and Abnormal
Hospital:											
Private ward ..	44	19	30	4	7	4	8	0	89	27	116
Public ward ..	11	0	6	0	2	0	1	0	20	0	20
Nursing-home ..	51	31	44	6	21	3	7	3	123	43	166
Domiciliary	23	13	40	5	28	1	9	0	100	19	119
Emergency hospital ..	0	0	3	0	0	0	0	0	3	0	3
Car	1								1		1
Total	130	63	123	15	58	8	25	3	336	89	425

Of the total deliveries 116 (27%) took place in hospital private wards, 166 (39%) in nursing-homes, and 119 (28%) in the mothers' own homes.

Table IX deals with the professional attendants.

Table IX.—Analysis by Professional Attendant

Attendant	1st		2nd		3rd		4th and 5th		Totals		
	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal and Abnormal
Specialist obstetrician	92	57	71	13	31	6	13	3	207	79	286
General practitioner	31	6	35	2	19	2	8	0	93	10	103
Midwife	7	0	15	0	7	0	3	0	32		32
House-surgeon ..							1		1		1
Born before arrival ..			2		1				3		3
Total	130	63	123	15	58	8	25	3	336	89	425

Obstetric specialists attended at the delivery in 62% of normal births and 89% of abnormal births. An obstetric specialist was engaged by almost all those delivered by midwives, but was unable to reach the mother in time to deliver the child.

Table X dealt with the presence or absence of a specialist anaesthetist and the time of his or her arrival. The replies to this question were inadequate to permit of analysis, and this table is therefore discarded.

Table XIa deals with anaesthetics given during labour.

The bulk of anaesthetics were given in the second stage of labour, those by far the most commonly used being chloroform.

Table XIa.—Anaesthetics in Stage 2 of Labour. Total Deliveries

Anaesthetic	1st Labour			2nd Labour			3rd Labour			4th Labour			5th Labour			All Labours			
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	Total
Chloroform	87	11	2	63	8	2	34	3	—	8	1	—	2	1	—	194	24	4	222
Ether	21	3	—	7	1	—	2	1	—	—	—	—	—	—	—	30	5	—	35
Chloroform and ether ..	6	—	—	1	1	—	—	—	—	—	—	—	—	—	—	7	1	—	8
Gas-and-oxygen ..	18	7	2	7	5	2	4	3	2	2	2	1	—	1	—	31	18	7	56
Gas-and-air	17	21	12	15	13	7	—	3	2	1	3	2	—	—	—	33	40	23	96
"Trilene"	4	1	1	5	5	2	2	—	—	2	—	—	—	—	—	13	6	3	22
Cyclopropane	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
Thiopentone	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
General?	7	—	—	7	—	—	1	—	—	1	—	—	1	—	—	17	—	—	17
Basal	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
Ethyl chloride	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	1
No anaesthetic	13			12			10			1			1			37			
Total No. of normal deliveries	130			123			58			21			4			336			
Normal deliveries receiving anaesthetics	90%			90%			83%			? (Numbers too small)			? (Numbers too small)			89%			

100% of abnormal births received anaesthetics. a, completely satisfactory; b, helpful; c, useless.

Classification of Anaesthetics in Table XIa.—In general the entries are classified under the main anaesthetic. The ether group includes all gas, oxygen, and ethers. Gas-and-oxygen—given almost entirely by anaesthetist. Gas-and-air—usually given by Minnitt apparatus by the patient herself. "Trilene"=trichlorethylene. The basal anaesthetics were "avertin" (bromethol) and paraldehyde. Thiopentone (pentothal) was given intravenously.

gas-and-oxygen, and gas-and-air. It must be noted that a high proportion of the births in this series took place before the introduction of analgesia with trilene.

Women doctors speak almost unanimously of the efficacy of chloroform given at this time. Out of 222 who received it 194 found it perfect; 24 of the remaining 28 found it helpful, leaving only four dissatisfied with its effects.

There is a suggestion that gas-and-air, administered in nearly every case by the Minnitt apparatus, was slightly more effective in the first stage of labour (see Table XIb), where 43% found it completely satisfactory, than in the second stage, where it achieved that degree of efficiency in only 34% of cases. There is a strong suggestion among the replies to the questionaries that in the case of gas-and-air and gas-and-oxygen given in the second stage of labour the efficacy of the anaesthetic agent was greatly enhanced when administered by a trained anaesthetist. There are thus three variables—the type of anaesthetic, the experience of the anaesthetist, and the time at which it is given.

Table XIb shows that most of the sedatives and analgesics were administered during the first stage of labour. In the second stage of labour the effect of these drugs is often overshadowed by the additional effect of an anaesthetic. Investigation has therefore been limited to those given in the first stage.

In general, as would be expected, there is a pronounced decrease in the use of these drugs in increasing birth orders. The sample is a small one, but there are two suggestive series of figures.

First, marked dissatisfaction is expressed with the effects of potassium bromide and chloral, the colloquial "mothers' mist." Out of 80 mothers who received it, 38, or approximately one-half, found it useless, and another 28 found it merely helpful, leaving only 14 who were entirely satisfied with it. Secondly, there is a suggestion that derivatives of opium were more helpful than morphine in a pure state—4 out of 31, or nearly 1 out of 8, finding the former useless, while 10 out of 40, or 1 in 4, found morphine itself useless.

Those who did not reply and had abnormal births all had caesarean sections. In the case of 336 normal deliveries, 53 mothers (16%) were left alone longer than they liked. Out of 89 abnormal deliveries, 12 (13%) made the same complaint. No cause for complaint in this respect was found in 83% of normal and 73% of abnormal labours. Of the 65 mothers who answered "Yes" to this question 40 were in the first stage of labour, 12 in the second stage, and 11 at the end of the first stage and the beginning of the second.

Table XIII dealt with the question, "Were you made to walk about at any stage of your labour when you would have preferred to lie down? If so, when?" This table is not given, but the replies received showed that few of the mothers had any cause for complaint in this respect.

Table XIb.—Sedatives and Analgesics in Stage I of Labour. Total Deliveries

Sedative and Analgesic	1st Labour			2nd Labour			3rd Labour			4th Labour			5th Labour			All Labours			
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	Total
Morphine	12	13	6	2	1	2	1	1	1	—	—	1	—	—	—	15	15	10	40
Morph. and hyoscine	4	4	1	—	1	—	—	—	—	—	—	—	—	—	—	4	5	1	10
Hyoscine	3	3	2	1	—	—	1	—	—	—	—	—	—	—	—	5	3	2	10
Opium and derivatives	15	5	4	4	2	—	—	1	—	—	—	—	—	—	—	19	8	4	31
Heroin	4	2	1	—	—	—	2	—	—	—	—	—	—	—	—	6	2	1	9
Barbiturates	1	4	2	1	2	2	—	1	—	—	1	—	—	—	—	2	8	4	14
Pethidine	6	7	4	7	9	2	2	3	2	1	1	—	—	—	—	16	20	8	44
Chloral + pot. brom.	4	15	27	8	7	8	2	4	2	—	2	1	—	—	—	14	28	38	80
Pot. brom.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
"Veganin"	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	1
Anaesthetics	**a**	**b**	**c**	**a**	**b**	**c**	**a**	**b**	**c**	**a**	**b**	**c**	**a**	**b**	**c**	**a**	**b**	**c**	**Total**
Gas-and-oxygen	4	4	2	—	—	—	1	2	—	1	2	1	—	—	—	6	8	3	17
Gas-and-air	6	6	6	11	5	4	3	3	—	—	1	1	—	—	—	20	15	11	46
"Trilene"	1	1	3	2	—	—	—	—	—	—	—	—	—	—	—	3	1	3	7
No analgesics	61			86			43			18			5						
Total deliveries	193			138			66			23			5						
Received analgesics, etc., total deliveries	68%			38%			35%			22%			Nil						

a, completely satisfactory; b, helpful; c, useless.

Classification of Drugs in Table XIb.—The hyoscine group includes scopolamine. The morphine and hyoscine group includes all "twilight sleep." The barbiturates include "amytal," barbitone soluble ("medinal"), "seconal," "hebaral sodium," thiopentone sodium, thiopentone (not intravenous), and pentobarbitone soluble ("nembutal"). The opium derivatives include "opoidine," "omnopon," "nepenthe," and tincture of opium. Heroin = diamorphine. The chloral group includes chloral and potassium bromide ("mothers' mist.") and chloral hydrate.

Table XII.—Were You Left Alone Longer than You Liked?

	Number of Delivery								Totals		
	1st		2nd		3rd		4th and 5th				
	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal and Abnormal
Yes:											
Stage 1	23	7	6	0	1	0	3	0	33	7	40
Stage 2	2	1	4	1	2	1	1	0	9	3	12
End of 1. Beginning of 2	3	2	3	0	2	0	1	0	9	2	11
Doubtful			?						2		2
Total Yes	28	10	15	1	4	1	5	1	53	12	65
" No	101	49	107	10	51	5	20	1	279	65	344
No reply	1	4	1	4	2	2	0	2	4	12	16
Total deliveries	130	63	123	15	58	8	25	3	336	89	425

Table XIV.—Wanted More Relief

No. of Delivery	Stage 1 of Labour			Stage 2 of Labour			Total Births		Grand Total
	N.	Abn.	Total	N.	Abn.	Total	N.	Abn.	
1st	44	22	66	37	13	50	130	63	193
2nd	24	8	32	26	4	30	123	15	138
3rd	15	1	16	16	1	17	58	8	66
4th	7	1	8	4	1	5	21	2	23
5th	1	—	1	1	—	1	4	1	5
All deliveries	91	32	123	84	19	103	336	89	425
Wanted more relief: % total births	27%	36%	29%	25%	21%	24%			

N. = normal; Abn. = abnormal.

Table XIV deals with the question, "Would you have liked more complete relief?"

A rather large proportion seemed dissatisfied with the relief afforded them during their deliveries, particularly in view of the fact that 148 out of the 193 first deliveries were conducted

by obstetric specialists and that medical women know what to expect when labour starts. This proportion was higher in the first stage of labour among the abnormal deliveries (36% compared with 27% in normal labours), but lower in the second stage. This is almost certainly due to the fact that in the second stage 100% of abnormal deliveries were conducted with an anaesthetic, compared with only 90% of normal deliveries.

Tables XVa and XVb deal with the question of perineal repair.

The answer to the first part is that a large majority of the medical women who completed the questionary are in favour of relief of pain in childbirth. Table I shows that 184 out of 196 replied "Yes" or "Sometimes" to the question, "Do you consider that relief of pain in childbirth is necessary?" while only 8 answered "No."

The detailed investigation of the various aspects of childbirth has yielded less definite information. This is due to

Table XVa.—Perineal Repairs

Type of Anaesthetic	1st Delivery		2nd Delivery		3rd Delivery		4th Delivery		5th Delivery		All Deliveries		
	Normal	Abnorm.	Normal	Abnorm.	Normal	Abnorm.	Normal	Abnorm.	Normal	Abnorm.	Normal	Abnorm.	Total
General	55 (1)	48	40 (1)	7	14	2	2	—	—	—	111 (2)	57	168
Local	9 (2)	—	6 (2)	—	—	—	1	—	—	—	16 (4)	—	16
None	8 (1)	—	5 (1)	—	5 (1)	—	—	—	—	—	18 (3)	—	18
Total	72 (4)	48	51 (4)	7	19 (1)	2	3	—	—	—	145 (9)	57	202
Total births, excluding caesarean	130	55	123	10	58	6	21	1	4	—	336	72	
Average age of mother	29	31	32	—	35	—	—	—	—	—	32	31	

The numbers in brackets received inadequate anaesthetization

Table XVb.—Perineal Repairs. Approximate Percentage of Total Births, Excluding Caesarean

Type of Delivery	1st Delivery	2nd Delivery	3rd Delivery	4th Delivery	5th Delivery	Total Deliveries
Normal	55% (S.E. 4·4)	41% (S.E. 4·4)	33% (S.E. 6·2)	14% (S.E. 7·8)		43% (S.E. 2·7)
Abnormal	87% (S.E. 4·5)	70% (S.E. 15·3)	33% (S.E. 21)			79% (S.E. 4·8)
Total	69%	44%	33%	14% (—)	Nil	50%

The position with regard to anaesthetization for perineal repair seems to be satisfactory on the whole. A general or local anaesthetic was given in the majority of cases and only 6 out of 184 mothers were dissatisfied. In the 18 cases where no anaesthesia was given only three expressed dissatisfaction.

A large proportion of the mothers required episiotomy or suffered perineal tears (see Table XVb): 55% (S.E. 4.4) of normal first births, 41% (S.E. 4.4) of normal second births, and 33% (S.E. 6.2) of normal third births. The average age of these mothers who required perineal repair was 29, 32, and 35 years respectively. Abnormal deliveries showed a higher incidence. In the larger sample, taking all normal deliveries together, the percentage requiring perineal repair was 43 (S.E. 2.7).

Tables XVI and XVII dealt with the two questions, "Did you take any special steps in this pregnancy in order to diminish pain in childbirth? If so, what?" And, "Did you practise antenatal exercises for this purpose; if so, do you think they were of value?" The majority of the mothers answered "No" to these questions, and it is felt that not enough information was received from the replies to make it worth while to give those tables in full.

GENERAL NOTE.—With the exception of the differences between normal and abnormal cases shown in Table XVb, none of the differences noted as suggestive are statistically significant. In other words, the trend of the differences is suggestive but they could in fact be due to chance alone. The present sample is too small to minimize the effect of chance on the results of the analysis.

Conclusions

This subcommittee was set up with the object of obtaining the opinion of women doctors who had children of their own on the need or otherwise for relief of pain in childbirth. It was also asked to carry out a concerted and thorough study of the whole question. The only possible method of carrying out such an investigation was by a questionary, a method which is immediately limited by the number who reply. Although the numbers are relatively small, there is reason to suppose that the sample is representative and that certain definite conclusions can be drawn from the results.

two factors—the small numbers in the sample and the highly complicated nature of the problem. The investigation has shown the great diversity of drugs and anaesthetics used for analgesia and anaesthesia in labour. New analgesic and anaesthetic agents are being continually discovered and used in obstetric practice. It is noteworthy that very few of the medical mothers received pethidine and trilene, both agents which have found great favour in obstetric practice in recent years and which are now used to a large extent in many obstetric departments. It is therefore probable that if this investigation were repeated in ten years' time the picture from the point of view of actual analgesics and anaesthetics would be very different. In the present investigation, however, much of the information received from the detailed studies is highly suggestive.

It is found that the majority of the medically qualified mothers did not dread a second confinement even after an abnormal first confinement (Table II) and that over two-thirds (Table III) found that the memory of pain in childbirth faded quickly.

The striking feature of Table VI, which analyses the method of delivery, is the high proportion delivered by forceps. This stands in contrast to the relatively low caesarean section rate. It is not possible to analyse the reasons for the large number of forceps deliveries—54 out of 193 first labours—though it may be accounted for in some cases by demand for delivery from the mothers themselves or to over-anxiety on the part of the attendant.

Table VIII shows that the majority of the confinements took place in the private wards of hospitals or nursing-homes, only 28% of mothers being confined in their own homes. Table IX, which deals with the professional attendant, shows that the majority of the mothers engaged an obstetric specialist for their confinements.

Two highly suggestive facts emerge from Table XIa, which deals with anaesthetics given during the second stage of labour. Women doctors are almost unanimous in their

praise of chloroform, though, as previously mentioned, the majority of these births took place before trilene came into wide use for obstetric analgesia. The presence of a trained anaesthetist appeared to enhance the effect of gas-and-air or gas-and-oxygen.

Table XIb deals with sedatives and analgesics, mostly given during the first stage of labour. A suggestive fact here is the almost universal dissatisfaction with potassium bromide and chloral mixtures. There is also the suggestion that derivatives of opium itself, such as tincture of opium and papaveretum (omnopon, opoidine) are more effective than morphine in the pure state. The small numbers in each group preclude any further conclusions from this table.

Table XII deals with the question, "Were you left alone longer than you liked?" The answers showed that only 65 mothers out of 409 who answered this question had any complaint in this respect, but those who answered "Yes" felt very strongly about the matter.

Table XIII dealt with the question, "Were you made to walk about at any stage of your labour when you would have preferred to lie down?" The replies showed that only a few mothers had any complaint in this respect.

Table XIV deals with the question, "Would you have liked more complete relief, and, if so, when?" The replies showed that a rather large proportion of the mothers would have liked more relief. This may be partly explained by the fact that there is as yet no safe method of analgesia which is completely effective in all stages of labour—a point which only serves to stress the need for continuing research into methods of relief of pain in childbirth. The majority of these labours were conducted by obstetric specialists, who are likely to be familiar with the best available methods of relief and to offer them to their patients.

Tables XVa and XVb show that the situation with regard to perineal repair is on the whole satisfactory. Tables XVI and XVII dealt with antenatal exercises and preparation for childbirth. Unfortunately the information gained from these tables was inadequate. While there is a real need for information on these points, it could be gained equally well from mothers who are not medically qualified.

The subcommittee feels that this investigation has yielded some important information and has also indicated possible lines of future investigation into the conduct of childbirth. As stated earlier, it is not felt that any extension of this particular investigation would be worth the work and expense involved. This report is presented as fulfilling, at least partly, the terms of reference of the subcommittee and in the hope that it will prove of value.

It is fully realized that the medical mothers studied in this report represent a specially privileged group and that the type of obstetric care they received cannot, at any rate for many years, be made available to all mothers. It is well known that even when elaborate equipment is not available a doctor or midwife can safely relieve much of the suffering of childbirth. In spite of this, the scope and availability of obstetric analgesia in the country as a whole leave much to be desired. The medically qualified mothers in this series are, with few exceptions, emphatic in their opinion that relief of pain is necessary in childbirth, and it is hoped that it will not be long before adequate means of relief are made available to all mothers.

Summary

The Subcommittee on Pain in Childbirth was set up by the Council of the Medical Women's Federation to obtain information regarding relief of pain in childbirth from married women doctors with children of their own.

A "pilot" questionary was sent to about 300 medical women, and 196 replies were received from those whose youngest child is not over 10 years of age.

Analysis of the replies shows that women doctors who have themselves had children are almost unanimously in favour of relief of pain in childbirth.

It was found that in the majority of cases the mothers did not dread a second confinement, and also that the memory of pain in childbirth faded quickly.

Analysis of the method of delivery showed a high incidence of forceps delivery in primigravidae. No adequate explanation can be given for this.

Analysis by place of confinement and by professional attendant showed that the majority of medical women are confined in private wards of hospitals and nursing-homes and the majority are cared for by obstetric specialists.

Analysis of anaesthetics given mainly in the second stage of labour shows that this group of medically qualified mothers found chloroform by far the most effective anaesthetic agent. It is noted that most of these births took place before trilene came into wide use in obstetrics. The efficacy of gas-and-air and gas-and-oxygen appears to be enhanced by the presence of a trained anaesthetist.

The small size of the sample precludes any definite opinion on the relative efficacy of the various drugs and sedatives given in the first stage of labour. The results, however, show considerable dissatisfaction with potassium bromide and chloral mixtures.

Out of a total of 409 mothers who answered the question, "Were you left alone longer than you liked?" 65 answered in the affirmative. Few mothers were made to walk about during their labours when they would have preferred to lie down.

A rather large proportion of the mothers stated that they would have liked more complete relief, 123 out of 425 deliveries, or 29%, for the first stage and 103 out of 425 deliveries, or 24%, for the second stage.

The situation with regard to perineal repair appears to be satisfactory.

No information can be obtained from this series regarding the value of antenatal exercises or of preparation for childbirth. Two questions were asked on these points, but no information of practical value could be obtained from the replies.

Dr. K. K. Conrad has carried out a tremendous amount of work in analysing the replies to the questionaries and in compiling the statistical report. The other members of the subcommittee are greatly indebted to her.

The subcommittee would also like to express its thanks to Miss Mabel Rew, secretary of the Medical Women's Federation, for her help with correspondence, in sending out questionaries, and in tracing names and addresses of medical mothers.

The National Birthday Trust Fund has given this investigation a grant to cover all expenses. The Medical Women's Federation would like to express its great indebtedness to the Fund.

The Ministry of Health has issued a memorandum on the licensing of mentally defective patients from institutions. The foundations of the scheme are (1) the selection of patients fit for community care, (2) choice of a suitable licensee and environment, and (3) social and medical supervision. The fuller the social training given and the greater the degree of supervised freedom and responsibility allowed, the easier it is to judge of a patient's capacity to live outside. An ancillary hostel from which they can go out to daily work is useful in testing their fitness for licence in the community. Mentally defective persons are generally unfit for the responsibility of marriage and parenthood, but the Board of Control considers that, where a patient who has been regarded as sufficiently stabilized for community care is found to be married, the presumption is in favour of discharge provided there is ground for thinking that the couple can maintain a home. Before recalling a patient who marries or is about to marry the superintendent should obtain full information, including a medical report on the patient's mental condition and reports on the character and financial position of the spouse and other relevant circumstances. The Board will then consider this information as well as the opinion of the hospital management committee before deciding on the question of discharge.

TUBERCULOUS MENINGITIS

EARLY DIAGNOSIS, AND A REVIEW OF TREATMENT WITH STREPTOMYCIN

BY

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At a unit at Highgate Hospital, established under the auspices of the Medical Research Council, 67 cases of tuberculous meningitis were admitted during the period July, 1947, to August, 1948. We have analysed the clinical and pathological findings in these cases and in a further 9 patients who recovered without streptomycin.

For the purpose of assessing the results of streptomycin treatment the analysis is confined to 54 cases (Table I) admitted during the period July, 1947, to May, 1948, giving a minimum observation period of 231 days (8 months).* Of these cases 23 were included in the Medical Research Council Report (1948).

Diagnosis

History of Contact.—A history of contact was established in 23 of 67 cases (34%). Patients under 3 years of age differed from older patients as shown in Table II.

TABLE II

	Total No.	No. giving History of Contact
Patients under 3 years of age ..	21	12 (57%)
Patients over 3 ,, ,, ..	46	11 (24%)
	67	23 (34%)

$\chi^2 = 5{\cdot}7$. $P < 0{\cdot}02$.

Three of the nine patients who recovered without streptomycin treatment gave a history of contact with tuberculosis.

Clinical Findings

Table III summarizes the main clinical findings and illustrates the interval between the first appearance of signs and symptoms and the day of diagnosis—the latter being the day on which the decision was made to start streptomycin treatment.

In this series of 67 cases the basic pattern of the disease was remarkably constant. Tuberculous meningitis has a prodromal period, characterized by irritability, listlessness, and fatigue, and failure to gain (or actual loss of) weight. It is not possible to know how long this stage lasts in any given case; it may be a few days or as long as three months. The child may appear to recover temporarily, or may pass directly into the next stage, characterized by headache, vomiting, anorexia, constipation, and fever (in that order of frequency of occurrence). Table III shows that diagnosis was most commonly made eight to fifteen days after the beginning of this second stage. Drowsiness, squint, photophobia, and neck rigidity came later, preceding diagnosis by one to five days.

Twenty-one of our patients were under 3 years of age. In this age group some of the signs and symptoms described above are not easily discernible or are impossible to elicit because such patients are often unable to convey complaints.

*Cases admitted after May, 1948, form part of a series alternate members of which received intrathecal "sulphetrone" in addition to streptomycin; we hope to report on this series later.

TABLE III.—*The Interval between the First Appearance of Signs and Symptoms and the Day of Diagnosis*

	Days before Diagnosis									
	0–3	4–7	8–11	12–15	16–20	21–30	31–40	41–50	51–60	61–7
Headache ..	2	3	12	10	2	6	1	0	1	1
Vomiting ..	4	10	16	5	2	4	0	0	0	0
Anorexia ..	1	2	5	7	3	3	2	0	0	0
Constipation ..	0	5	5	3	0	0	2	0	0	0
Irritability ..	2	2	4	4	2	1	2	1	0	0
Fatigue	0	3	2	2	3	1	1	1	0	0
Wasting	0	0	0	2	1	1	0	1	1	0
Drowsiness ..	6	8	6	3	1	0	0	0	0	0
Squint	3	1	0	0	0	0	0	0	0	1
Fever	1	2	6	3	1	2	0	0	0	0
Neck rigidity ..	21	7	2	0	0	0	0	0	0	0
Paralysis ..	0	0	1	1	0	0	0	0	0	0
Fits	4	0	1	0	0	1	0	0	0	0
Delirium ..	1	2	0	0	0	0	0	0	0	0
Coma	6	0	0	0	0	0	0	0	0	0
Abdominal pain	0	1	0	1	0	0	0	0	0	0
Diarrhoea ..	0	1	0	2	0	0	0	0	0	0
Photophobia ..	4	0	0	0	0	0	0	0	0	0

The figures in the body of the table indicate the frequencies of occurrence of the intervals.

The prodromal features may be missed in this group; listlessness may be difficult to detect, and minor degrees of irritability may be attributed to teething or feeding difficulties. Such patients may be unable to disclose the presence of headache (the earliest and the commonest event in the next stage), so that vomiting becomes the presenting feature. In very young patients the disease tends to run a more rapid course; the vomiting may rapidly give place to meningism, squint, drowsiness, and soon to coma. Vomiting (rapidly followed by meningism) was the earliest sign in 23 of the 67 patients, and 16 of these 23 were not more than 3 years of age, the oldest of the 23 being 5 years of age.

Apart from the variations in mode of onset due to age, certain less common signs and symptoms may be superimposed on the general pattern, or the presenting features may be notably few in number. Three patients (all under 3 years of age) presented with fever only—followed by neck rigidity within a few days. In three cases diarrhoea accompanied vomiting, giving rise to a misleading picture of gastro-enteritis; in another two cases abdominal pain was prominent. Fits or convulsions occurred in six patients: in one of these the fits preceded all else by ten uneventful days; in another the fit was followed by a hemiplegia which lasted six hours and then disappeared; in the remaining four patients fits were a late feature.

Transient paralysis of arm and leg (lasting 24 hours) occurred in one case 15 days before diagnosis and led to an initial diagnosis of poliomyelitis. Transient loss of speech for a few hours accompanied by a headache (which persisted) was noted in one case 40 days before diagnosis; symptoms of the "middle stage" (see below) followed two weeks later. In two cases whooping-cough, and in one case mumps, occurred a few weeks before the onset of signs and symptoms of tuberculous meningitis.

In three cases the child had sustained a blow on the head before the illness. One of these cases was admitted to a hospital with headache and vomiting following a kick on the head, and was there found to be suffering from tuberculous meningitis (previously the child had apparently been quite well).

On admission to the unit, all cases were classified in the following manner. Early cases (E): fully conscious patients, with no focal signs and little or no meningism, but with pathological cerebrospinal fluid and a characteristic mental picture. Middle cases (M): fully conscious but sometimes drowsy and lethargic, with neck rigidity and perhaps focal signs. Advanced cases (A): unconscious or deeply stuporous patients. The length of the period of illness before admission bore no constant relation to the stage on admission.

Mental Picture on Admission.—The mental picture was that of apathy, with poverty of speech and movement even in fully conscious patients—often accompanied by resentment of even the slightest interference. We have come to the conclusion that this mental attitude is the most valuable single criterion in the differential diagnosis from other forms of meningitis. The apathy may later give place to a state of confusion, in which the patient lies quietly in bed; interrogation will reveal varying degrees of withdrawal from the environment. Occasionally noisy confused behaviour alternates with the apathy. This mental picture is of course recognized as indicative of raised intracranial pressure.

Eyes.—Papilloedema is a common finding in middle or advanced cases. Choroidal tubercles were seen in 5 cases in association with miliary tuberculosis of the lungs accompanying the tuberculous meningitis.

Diagnostic Investigations

(i) *Mantoux Test.*—This was completed in 51 cases; 16 patients lived only a few days after admission. The reactions are shown in Table IV.

TABLE IV

	E Cases	M Cases	A Cases	Total Cases
Positive at 1 in 10,000	17	13	4	34
,, ,, 1 in 1,000	6	3	3	12
,, ,, 1 in 100	0	3	1	4
Negative in all three dilutions ..	0	1	0	1

A positive reaction was defined as an area of oedema measuring at least 8 mm. in diameter.

(ii) *Chest Radiograph.*—Definite abnormalities in the chest *x*-ray film were seen in 50 of 66 cases (one patient died before radiographs could be taken). They comprised: (*a*) *A primary complex* (usually hilar adenitis, sometimes accompanied by indications of pulmonary collapse) in 35 cases. (*b*) *Miliary disease of the lungs in 13 cases.* (A further 6 cases proved at necropsy to have miliary disease of the lungs, although there was no radiological evidence of this during life.) (*c*) *Phthisis,* present in two adults. In the remaining 16 cases no abnormality was seen.

(iii) *Cerebrospinal Fluid.*—The following investigations were carried out:

Cell Count.—The cell count ranged between 30 and 1,000 cells per c.mm. The figure bore no relation to the stage of the disease on admission. The picture was predominantly lymphocytic in all but two cases.

Protein Content.—All cases (with one exception) showed increased protein at the initial lumbar puncture: the figures ranged from 35 mg. to 3.5 g. per 100 ml., and bore no relation to the stage of the disease, except that grossly raised protein levels were usually associated with spinal loculation due to spread of the disease down the theca.

Chlorides.—It is generally appreciated that though a falling chloride level in the C.S.F. is often found the level is not usually of great help in diagnosis, because in early cases it may be quite normal or only slightly reduced. Our figures confirm this view.

Sugar.—C.S.F. sugar levels were not accurately estimated in the early period of our work, as it was not appreciated that diagnostic information would be obtained. When later such estimations were performed approximately 1 ml. of C.S.F. was collected in a separate bijou bottle containing an appropriate amount of sodium fluoride. The sugar levels at initial lumbar puncture are summarized in Table V. It will be seen that in no case was the level above 45 mg. per 100 ml. The significance of these figures is discussed later.

Direct Examination of C.S.F. for Acid-fast Bacilli.—Prior to and within 48 hours of admission, acid-fast bacilli were seen in the centrifuged deposit of the C.S.F. in 39 of 67 cases (58%).

TABLE V

C.S.F. Sugar mg./100 ml.	No. of Cases	C.S.F. Sugar mg./100 ml.	No. of Cases
5+	2	30+	1
10+	4	35+	5
15+	6	40+	2
20+	4	45+	—
25+	4	50+	—

Five further cases first showed acid-fast bacilli at later dates. The organisms were often very scanty in number.

Culture and Guinea-pig Inoculation.—Culture of the C.S.F. was made on Löwenstein medium in every case and a guinea-pig inoculation was carried out. The results* are summarized as follows: total cases, 67; positive by culture and/or guinea-pig, 58 (87%). Nineteen cases whose C.S.F. was negative by direct examination for acid-fast bacilli were verified bacteriologically by culture and/or guinea-pig inoculation. Four cases were diagnosed by microscopical examination of the C.S.F. but failed to yield positive cultures or inoculations. (The diagnosis in these cases was verified at necropsy.) If these are added to the positive cultures and inoculations the total number of cases diagnosed bacteriologically (otherwise than by post-mortem examination) is 62 (92%). Varying numbers of strains from 43 patients have shown no significant streptomycin resistance.

Differential Diagnosis

Nine patients admitted to the unit as cases of tuberculous meningitis were not treated with streptomycin. Meningitis was present in all. Their ages and the findings in the C.S.F. are given in Table VI.

TABLE VI

Case No.	Age (Years)	C.S.F. Findings: Cells	Protein	Chlorides	Sugar	Remarks
68	4½	193 (L. 95%)	160	710	—	N. in 19 days
69	8/12	Blood-stained fluid with excess W.B.C.			—	N. ,, 9 ,,
70	6	520 (L. 65%)	35	740	—	N. ,, 20 ,,
71	1½	56 (L. 100%)	20	740	50	N. ,, 14 ,,
72	10½	60 (L. 95%)	20	750	—	N. ,, 7 ,,
73	4½	34 (L. 80%)	40	695	—	N. ,, 3 ,,
74	8½	95 (L. 15% P. 85%)	60	700	60	N. ,, 9 ,,
75	5½	18 (L. 100%)	20	760	—	N. ,, 10 ,,
76	5½	85 (L. 25% P. 75%)	35	705	67	N. ,, 23 ,,

N. = Normal. L. = Lymphocytes. P. = Polymorphs.

Case 68.—Mantoux-negative. Chest radiograph, negative. History of contact, negative. Meningism, slight. No focal signs. Mentally alert. The meningism disappeared within 48 hours of admission. C.S.F. normal in 19 days; subsequent history uneventful.

Case 69.—Mantoux-negative. Chest radiograph, negative. No history of contact. The infant was unable to sit up, but seemed mentally alert. Full recovery with normal C.S.F. in 9 days.

Case 70.—Mantoux-negative. Chest radiograph, negative. History of contact, *positive.* Meningism slight. No focal signs. Patient mentally alert. Meningism disappeared within 48 hours of admission.

Case 71.—Mantoux-negative. Chest radiograph, negative. History of contact, *positive.* Definite meningism, with right sixth nerve paralysis. Patient mentally alert. This case caused us considerable anxiety at the time of admission. The picture was suggestive—but the mental condition (and the high sugar content in the C.S.F.) led us to withhold treatment. The child was much better within 48 hours—all meningism disappeared and the patient stood up at the foot of the cot and played happily. The C.S.F. was normal in 14 days. Subsequent history uneventful. Very slight right sixth nerve weakness persists.

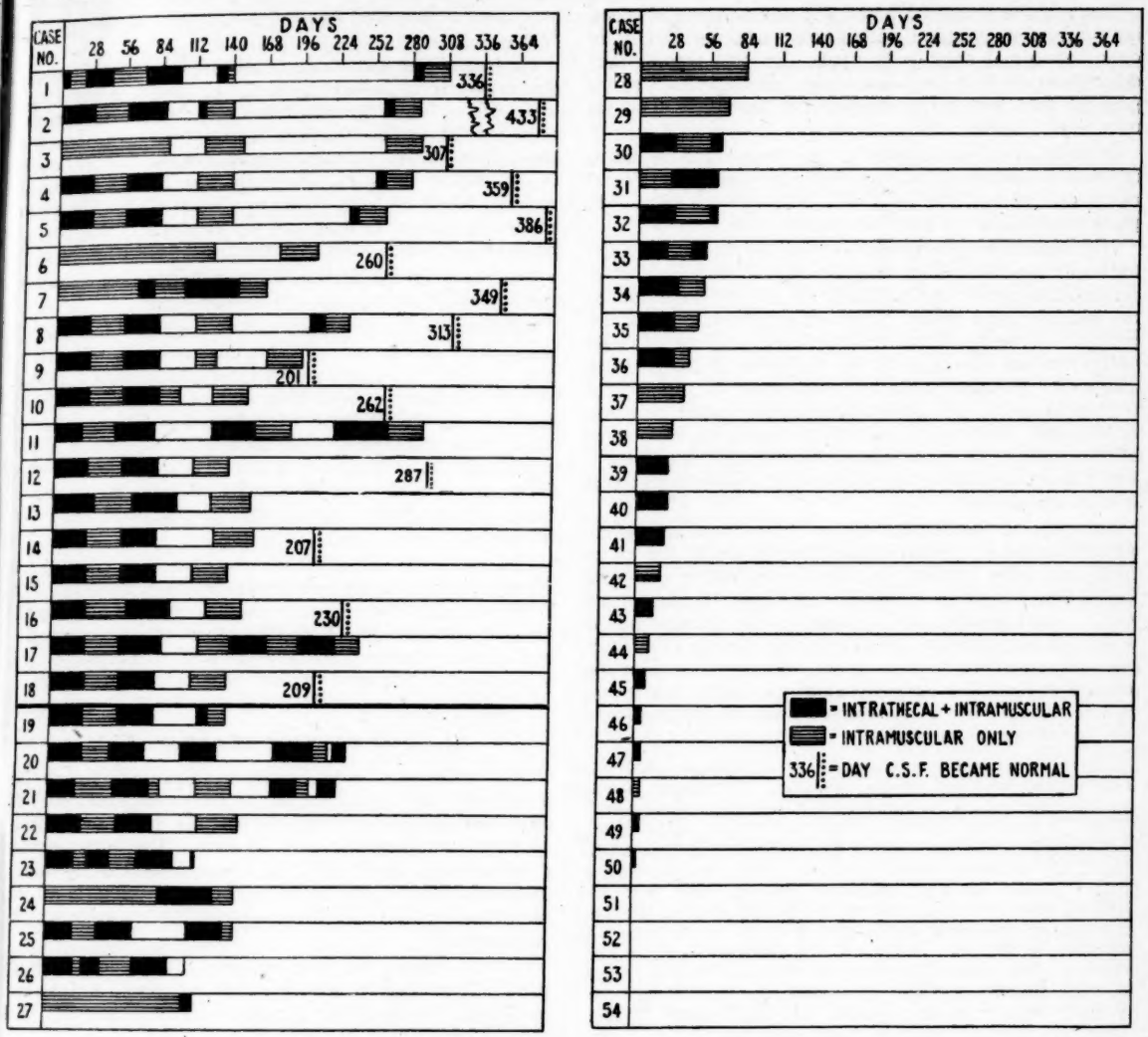
In the four above cases a diagnosis was never established. It is possible that they were cases of polio-encephalitis. It is also possible that Case 71 was in fact an abortive case

*These results do not allow comparison to be made between Löwenstein culture and guinea-pig inoculation, as the number of specimens cultured is greater than the number inoculated into guinea-pigs.

TABLE I.—*Details of the 54 Cases dealt with in Section on Treatment*

	Case No.	Age	Days History Before Diag.	Stage on Admission	Direct Exam. of C.S.F for Tb.	Culture of C.S.F. for Tb.	Gu. Pig. Inoc. of C.S.F.	Chest *X* Ray etc.	History of Contact	No. of Days Observed	Method of Treatment	Result
SURVIVING CASES	1	4 6/12	10	E	+	+	+	P.C. Mil.	+	560	I.T. + I.M.	C.S.F. normal; deaf; slight ataxia
	2	4 7/12	31	M	O	+	O	Mil.	O	547	I.T. + I.M.	C.S.F. normal; slight ataxia
	3	8 8/12	3	E	+	+	+	P.C. Knee	+	536	I.M.	C.S.F. normal; full recovery
	4	6 1/12	8	M	+	+	O	P.C.	O	533	I.T. + I.M.	C.S.F. normal; full recovery
	5	6 6/12	8	E	+	+	+	O	+	517	I.T. + I.M.	C.S.F. normal; full recovery
	6	3 4/12	5	E	O	+	O	P.C. Spine	O	490	I.M.	C.S.F. normal; full recovery
	7	12 11/12	12	M	+	O	+	O	O	485	I.M.→I.T.	C.S.F. normal; full recovery
	8	15 6/12	8	E	+	+	+	Mil. Perit.	O	481	I.T. + I.M.	C.S.F. normal; full recovery
	9	10/12	12	M	+	+	+	P.C.	O	425	I.T. + I.M.	C.S.F. normal; full recovery
	10	10 4/12	30	A	+	+	+	O	O	363	I.T. + I.M.	C.S.F. normal; full recovery
	11	11	10	E	+	+	+	Mil.	O	290	I.T. + I.M.	Relapsed twice; doing well; C.S.F. almost normal
	12	17 8/12	28	E	O	+	O	O	O	287	I.T. + I.M.	C.S.F. normal; full clinical recovery
	13	10	10	M	+	+	+	O	O	282	I.T. + I.M.	C.S.F. almost normal; full clinical recovery
	14	6	13	M	O	+	O	P.C.	O	279	I.T. + I.M.	C.S.F. normal; right hemiplegia; great improvement; up and about
	15	5 6/12	10	E	+	+	+	Mil.	O	262	I.T. + I.M.	C.S.F. almost normal; full clinical recovery
	16	10 3/12	28	E	O	O	O	Mil.	O	246	I.T. + I.M.	C.S.F. normal; full recovery
	17	5 1/12	10	M	+	+	+	P.C.	+	238	I.T. + I.M.	Relapsed; responding again
	18	4 11/12	10	E	+	+	+	P.C.	O	231	I.T. + I.M.	C.S.F. normal; full recovery
	19	7 2/12	17	M	O	O	+	O	O	270	I.T. + I.M.	Late relapse; was never well
	20	5 2/12	42	E	+	+	O	P.C.	+	241	I.T. + I.M.	Late relapse; was never well
	21	15 7/12	12	M	+	+	+	O	O	237	I.T. + I.M.	Late relapse after initial improvement; late surgical intervention
	22	20	4	E	+	+	+	Pthisis	O	217	I.T. + I.M.	Initial response; sudden late deterioration
	23	10 5/12	70	A	+	+	+	O	O	195	I.T. + I.M.	Slight initial response; became chronic; never looked like recovering
	24	4 3/12	28	E	+	+	O	P.C.	+	181	I.M.→I.T.	Initial promising response, especially when given I.T. treatment
	25	11 6/12	11	M	+	+	+	O	O	149	I.T. + I.M.	Late relapse; surgical intervention and further streptomycin prolonged life
	26	19	15	M	+	+	+	Pthisis	O	120	I.T. + I.M.	Rapid deterioration; became chronic after surgical intervention
	27	9 10/12	13	E	+	+	O	P.C. Mil.*	O	104	I.M.→I.T.	Initial promising response; life prolonged
	28	4	17	M	+	+	+	P.C.	+	103	I.M.	Very slight initial response; slow deterioration
	29	4 11/12	15	M	+	O	O	Mil.	O	69	I.M.	Slight initial response, then slow deterioration
	30	11/12	19	E	+	O	O	O	+	67	I.T. + I.M.	Surgical intervention too late
	31	5 11/12	30	M	+	+	+	P.C.	O	63	I.M.→I.T.	Initial improvement; life prolonged
	32	17	12	M	+	+	+	O	O	63	I.T. + I.M.	Promising initial response; relapse; surgical intervention; vascular accident, due to arteritis
	33	3 2/12	16	M	O	+	+	P.C.	O	55	I.T. + I.M.	Surgical intervention too late
	34	4 9/12	14	A	O	+	+	P.C.	O	52	I.T. + I.M.	Initial response; life prolonged
	35	2 10/12	23	A	O	O	O	P.C. Mil.*	O	51	I.T. + I.M.	Initial response; life prolonged
	36	2 9/12	21	E	O	O	O	O	O	45	I.T. + I.M.	Steady deterioration; no response
	37	2 11/12	60	M	+	+	O	Mil.	+	37	I.M.	Initial response; life prolonged
	38	1 5/12	9	A	O	+	+	P.C. Mil.*	+	29	I.M.	Slight response
	39	1 9/12	14	E	+	+	O	O	+	27	I.T. + I.M.	No response
	40	2 9/12	43	M	+	+	O	P.C.	+	25	I.T. + I.M.	Rapid deterioration
	41	5 1/12	9	M	+	+	+	P.C. Mil.*	O	23	I.T. + I.M.	Rapid deterioration
	42	5 9/12	10	M	+	O	O	P.C.	+	19	I.M.	Rapid deterioration
	43	1 8/12	9	A	+	+	+	O	O	12	I.T. + I.M.	Admitted hopelessly ill
	44	2 11/12	12	A	O	+	+	P.C. Spine	+	11	I.M.	Admitted hopelessly ill
	45	27	56	E	+	+	+	Mil.	O	8	I.T. + I.M.	Died of renal failure; Tb. kidneys; cachexia
	46	1 7/12	15	A	+	O	+	P.C.	O	7	I.T. + I.M.	Admitted hopelessly ill
	47	1	15	M	+	O	O	O	+	7	I.T. + I.M.	Admitted hopelessly ill
	48	2 2/12	6	A	O	+	+	Mil.	+	6	I.M.	Admitted hopelessly ill
	49	6/12	16	A	+	+	+	P.C.	O	6	I.T. + I.M.	Admitted hopelessly ill
	50	8 11/12	36	A	O	O	+	P.C.	O	5	I.T. + I.M.	Admitted hopelessly ill
	51	6 10/12	16	M	+	+	O	P.C.	O	4	I.T. + I.M.	Admitted hopelessly ill
	52	1 4/12	6	A	O	O	O	P.C.	+	3	I.M.	Admitted hopelessly ill
	53	2 6/12	9	A	+	+	+	P.C. Mil.*	+	3	I.T. + I.M.	Admitted hopelessly ill
	54	2 1/12	10	A	O	+	O	P.C. Mil.*	O	2	I.T. + I.M.	Admitted hopelessly ill

E = Erly case. M = Middle case. A = Advanced case. P.C. = Primary complex. Mil. = Miliary disease of lungs. Mil.* = Miliary found P.M.
I.T. + I.M. = Intrathecal + intramuscular. I.M. = Intramuscular. I.M.→I.T. = Intramuscular going on to intrathecal.



Charts of the 54 cases detailed in Table I

of tuberculous meningitis, although this seems unlikely. We favour the diagnosis of polio-encephalitis here too.

Case 72.—This patient was in hospital following a pleural effusion, and was awaiting transfer to a pleural-effusion unit as a case of primary tuberculosis. Mantoux-positive. He developed a fever accompanied by headache and vomiting. The C.S.F. was pathological (see Table VI), but this child in particular was alert and happy. The C.S.F. was normal in 7 days.

Case 73.—After two months' history of listlessness, anorexia, and abdominal pain this patient had a fit and was admitted to a hospital in an unconscious state. He recovered consciousness but was mentally unstable; a week later he had a series of fits, after which his reflexes were absent and his plantar responses extensor. At this time the Mantoux reaction was very strongly positive at 1 in 10,000. He was transferred to our unit with the provisional diagnosis of tuberculoma of the brain. He had no further fits. His C.S.F. became normal in 3 days, and clinically he recovered completely. We had the advantage of seeing him late in the illness, when he was recovering and was mentally and clinically normal.

Case 74.—This patient was in a sanatorium for treatment of a large primary complex. His chest radiograph showed right hilar adenitis with pneumonic changes in the upper lobe. He had displayed meningism. On admission to the unit he was mentally alert, and showed some slight neck rigidity but no focal signs. The C.S.F. became normal in 9 days.

Case 75.—This child had pulmonary tuberculosis with a pleural effusion. She became febrile again, vomited, and was less playful. Neck rigidity and drowsiness were noted. She was admitted with a C.S.F. picture as shown in Table VI. Clinical examination on admission (11 days after the onset of these symptoms) was negative. Her C.S.F. became normal in 10 days.

Case 76.—A boy aged 5¼ years was admitted from a sanatorium where he had been under observation for primary tuberculosis of the right lung with a pleural effusion. He complained of headache and was febrile. Table VI shows the C.S.F. findings at the initial lumbar puncture at the sanatorium. He was admitted to the unit, and 48 hours after the initial lumbar puncture the C.S.F. showed: W.B.C., 316 per c.mm. (lymphocytes 100%); protein, 25 mg. per 100 ml.; chlorides, 725 mg. per 100 ml.; sugar, 37 mg. per 100 ml. In spite of this suggestive finding he was mentally alert, and he had no meningism or focal signs. The C.S.F. the next day showed: W.B.C., 184 per c.mm. (lymphocytes 100%); protein, 25 mg.; chlorides, 710 mg.; sugar, 55 mg. He remained well, was not treated with streptomycin, and the C.S.F. became normal in 23 days.

Cases 72–76, it will be noted, showed evidence of existing tuberculous infection, with a positive Mantoux reaction or an abnormal chest radiograph. (In this respect they differ from the first four cases described above.) It seems possible that they were examples of serous tuberculous meningitis (Lincoln, 1947).

In cases of miliary disease of the lungs receiving intramuscular streptomycin we have observed transient meningeal reactions, lasting 7–10 days and characterized by C.S.F. pleocytosis, raised protein, *but normal sugar*.

It is difficult to give precise reasons for the decision not to begin treatment with streptomycin in the nine cases summarized above: undoubtedly the mental condition of the patients was a factor. The contrast between this comparative alertness and the apathetic detachment of cases of tuberculous meningitis is an extremely useful guide to diagnosis. Perhaps a mother's statement that her child is "not himself" is in reality the earliest possible detection of this sign. Professor Craig (1948) stresses the early stage of this withdrawal from contact with others and gives a very full account of the subtle mental changes often noticed first by the mother.

In regard to the findings in the C.S.F., these are incomplete in respect of sugar estimations, as six of the above nine cases were admitted before our realization that such estimations might be valuable. In Cases 71 and 74 the C.S.F. sugar content was a factor in the decision not to treat with streptomycin. We agree with Lincoln (1947) that the low sugar content may be the earliest informative change in the C.S.F. in tuberculous meningitis, but it may not be evident when other symptoms are already suggestive, as the following case shows.

Case 18.—This is a proved case of tuberculous meningitis and is now doing well under treatment. The disease started with a convulsion. C.S.F. examination showed no abnormality: W.B.C., 4 per c.mm.; protein, 15 mg. per 100 ml.; sugar, 82 mg. per 100 ml.; chlorides, 770 mg. per 100 ml. Eight days later the C.S.F. showed: W.B.C., 500 per c.mm., mainly lymphocytes; protein, 60 mg.; chlorides, 730 mg. The child had suffered from erythema nodosum five months previously; chest radiographs showed a well-marked primary focus. She was admitted to the unit, and the C.S.F. findings were: W.B.C., 603 per c.mm., mainly lymphocytes; protein, 140 mg.; sugar, 40 mg.; chlorides, 690 mg. Three days later the findings were: W.B.C., 193 per c.mm.; protein, 160 mg.; sugar, 22 mg.; chlorides, 700 mg. Acid-fast bacilli were seen.

This case shows that in the earliest stages the C.S.F. may be normal. This point was also illustrated in Case 9, in which a normal C.S.F. was found at initial lumbar puncture and in which the C.S.F. became abnormal five days after the onset of symptoms. Case 36 showed a normal C.S.F. 11 days after the first symptoms. The first pathological C.S.F. was found 15 days after the onset of symptoms.

The causes of a lymphocytic cell increase in the C.S.F. may be summarized as follows: (1) Tuberculous meningitis, and serous tuberculous meningitis; (2) polio-encephalitis and poliomyelitis; (3) benign lymphocytic choriomeningitis; (4) glandular fever (infectious mononucleosis); (5) mumps encephalitis; (6) spirochaetal infections (syphilis, leptospiral diseases, relapsing fever); (7) infective hepatitis; (8) atypical pneumonia; (9) herpes zoster; (10) psittacosis; (11) trypanosomiasis; (12) yeast meningitis.

Summary and Conclusions in Regard to Diagnosis

Chest radiography, lumbar puncture, and the injection of 0.1 ml. of 1 in 1,000* Mantoux reagent should all be performed within 48 hours and not be spread over several days.

We had hoped to be able to discover at least one diagnostically helpful feature in the C.S.F. But it is now clear that such a hope did not take into account the urgent necessity for earlier diagnosis. It is true that *when the disease has reached the stage indicated in the cases reviewed in this report* the most useful findings in the C.S.F. (if acid-fast bacilli are very scanty or absent) are the low sugar content, the raised protein, and the increased (lymphocytic) cell count—in that order of importance.

There is a high correlation between the speed of diagnosis and success in treatment.

Reference to the nine cases reviewed under "Differential Diagnosis" shows that patients may present themselves with a history of contact with tuberculosis, with evidence of extrameningeal tuberculosis, and with abnormal C.S.F. and yet may not develop what is ordinarily regarded as tuberculous meningitis. Our experience suggests that the crucial feature in diagnosis is the clinical picture—in particular the mental state of the patient. By this criterion we have (apparently successfully) distinguished the cases referred to above.

Lincoln (1947) and Choremis and Vrachnos (1948) have described cases displaying acid-fast bacilli in the C.S.F. but not developing tuberculous meningitis. On the other hand, three of our cases (9, 18, and 36) which in spite of suggestive clinical features initially showed a normal C.S.F. subsequently developed typical tuberculous meningitis.

Review of Treatment with Streptomycin

The scheme of streptomycin treatment we follow is: intrathecal and intramuscular, 28 days; intramuscular, 28 days; intrathecal and intramuscular, 28 days; rest period, 28 days; intramuscular only, 28 days. The intramuscular dose is 0.02 g. per lb. (0.45 kg.) body weight in 24 hours, given six-hourly. The intrathecal dose is 0.1 g. in 10 ml. normal saline daily. Further treatment is given subsequently if indicated.

On this scheme we have cultured tubercle bacilli from the C.S.F. in cases (which have since recovered) as follows: in 3 cases, 21 days after the beginning of treatment; in 1 case 53 days after; in 1 case 56 days after.

We feel, therefore, that there is no case for lessening the intensity or duration of the initial attack and are inclined to favour the suggestion of Dubois *et al.* (1947) and the practice of Smith, Vollum, and Cairns (1948) that 45 days or more initial intrathecal therapy should be given. This is, however, difficult because of the chemical meningitis and the general ordeal of treatment. One or two days' rest during intrathecal treatment allows the chemical meningitis to abate.

It is possible to effect a cure with intramuscular streptomycin, but we agree with the conclusions reported by the Medical Research Council (1948) that combined therapy gives better results, though there may be a misleading initial response.

During streptomycin treatment patients show to a varying degree fever, loss of weight, anorexia, vomiting, and skin rashes. With the exception of the last-named, these features, if severe and prolonged, are due to the disease rather than the drug. Chemical meningitis varies in intensity. The urticarial rashes respond to "benadryl" and those of the exfoliative dermatitis type to local application of cod-liver oil. Towards the end of the intrathecal course patients complain of severe pains in the legs, probably due to nerve-root irritation. A soft growth of hair on the body

*Omission of the 1 in 10,000 dilution is considered justifiable: 48 hours may be saved, and the risk of troublesome local reaction is small.

(chiefly back, limbs, and neck) is common. Eyelashes become very long; scalp hair often falls out.

Most of the signs and symptoms seen before and during treatment are due to increased intracranial pressure, at first probably a diffuse swelling of the brain, but sooner or later hydrocephalus. Vascular lesions cause paralysis and occasionally death, and the exudate may be responsible for cranial-nerve abnormalities, especially of the third, sixth, and seventh nerves.

Drowsiness, voracious appetite (somewhat resembling the Kleine-Levin syndrome), facial flushing, glycosuria, hyperthermia, hyperalgesia, and emotional instability may be due to the hydrocephalus and its effect upon the midbrain, thalamic, and hypothalamic regions; or, on the other hand, the dominant lesion may be a tuberculous arteritis depriving these centres of their blood supply (Smith, Vollum, and Cairns, 1948).

We consider that carpo-pedal spasm and main d'accoucheur, resembling tetany, are manifestations of tonic fits (Ford, 1946). They do not respond to calcium.

C.S.F. during Treatment

Intrathecal, but not intramuscular, streptomycin causes a pleocytosis. A steadily rising protein level is usually of bad omen, indicating an extension of disease down the spinal theca. We have, however, seen complete recovery after the lumbar C.S.F. protein had reached 11 g. per 100 ml. Table VII shows the streptomycin levels in a case on

TABLE VII

Time	Streptomycin Content (Micrograms per ml.)	
	Lumbar C.S.F.	Cisternal C.S.F.
12 noon. Before treatment (0.1 g. streptomycin given intrathecally by lumbar route)	0	0
1 p.m.	4,400	174
4 p.m.	1,000	—
12 midnight	40	—
12 noon (24 hours after injection) ..	10	3·3

intrathecal therapy. Tests on another patient (24 hours after lumbar injection of 0.1 g.) showed a ventricular level of 2.7 micrograms per ml.

Return to Normal.—So long as intrathecal streptomycin is continued the C.S.F. remains abnormal in cell content. It gradually becomes more normal when streptomycin is stopped, and in the absence of relapse complete return to normal has been noted at approximately 200 days from the beginning of treatment on the lines described. However, cases have been observed in which, in spite of apparent clinical recovery, the C.S.F. cell count remained slightly raised. A further month's course of streptomycin was given to these cases, but the abnormality persisted and the C.S.F. did not return to normal till seven months after the cessation of all treatment and approximately a year after admission. Of the 18 cases which have survived for more than 230 days, 14 have a normal C.S.F. No case in which the C.S.F. has become normal has relapsed.

Chest Lesions.—Streptomycin does not seem to affect the process of healing of the tuberculous adenitis which accompanies the primary infection. Miliary tuberculosis of the lungs, however, clears radiologically in from 8 to 12 weeks. Such clearance occurred in one case in which nevertheless death resulted from tuberculous meningitis.

Eighth-nerve Lesions.—Audiogram tests were carried out in 8 cases. One child (Case 1) is very deaf and slightly ataxic; it is difficult to decide whether this is due to the streptomycin or to the disease. We believe it is due to the tuberculous meningitis. Audiograms on the other children showed a loss of hearing of 10–20 decibels at all frequencies, but it requires this special test to detect the abnormality. A second child (Case 2) is very slightly ataxic, but the disability is improving rapidly and is hardly discernible. An older case (No. 12) was ataxic—in particular in the dark of the cinema; but with special exercises at King's College Hospital he too has improved.

Surgical Intervention

Ten cases have been operated on with the object of relieving hydrocephalus. The operations tried included the placing of a plastic tube 1 mm. in diameter in the lateral ventricle through a burr-hole. The hydrocephalus is of the communicating type, and, whereas in chronic hydrocephalus this operation is disappointing, in this acute condition (especially as the cause has been shown by Sir Hugh Cairns and others to be pressure of the brain back against the free margin of the tentorium) we felt it should be tried. We hoped that by relieving the intracranial tension we could break the vicious circle by relaxing the brain away from the tentorium and at the same time allow the drug to circulate. The approach is either by the anterior or by the posterior route.

A child aged 1½ years (admitted later than May, 1948) was treated by intrathecal and intramuscular streptomycin for a month, but a week after intrathecal therapy was stopped he vomited and cried and developed increasing meningism. A plastic tube was inserted into the right lateral ventricle through a frontal burr-hole and left *in situ* for six weeks. A Bateman needle occluded the end, and the stylet was removed every six hours to allow the C.S.F. to drain. (The lumbar C.S.F. protein rises while this is being done.) The tube has now been out for four months and the child appears to be responding. It seems that this operation relieved the acute hydrocephalus. This child is the only survivor of the 10 cases surgically treated.

In another infant Mr. Dickson Wright placed a fine tube into the third ventricle and ran the other end over the cortex backwards. In this case the child was too ill for the operation to have a chance.

A girl of 15 relapsed after seven months—a situation in which we have found that the mere placing of a tube into the lateral ventricle does no good. Mr. Dickson Wright raised a frontal flap, and in addition to the ventricular tube a second tube was placed at the site of the disease, in front of the optic chiasma, and streptomycin was given through it. She improved and life was certainly prolonged, but ultimately she died. Necropsy showed an extensive tuberculous exudate at the base of the brain.

To summarize, while surgical intervention seems to offer a logical approach to the relief of the hydrocephalus, our results have been disappointing. Only one of the ten cases thus treated survives, but in other cases life was certainly prolonged. Operation is useless in advanced cases. The difficulty is to formulate the indications for surgical intervention, which will probably need to be early to be successful. Further work on this problem is essential.

Other Factors in Treatment.—Many of these cases were admitted to the unit in a dehydrated condition, but it is remarkable how even the most drowsy will take fluid by mouth in automatic fashion. If this is not possible then rectal or intravenous fluid should be given. Chloral and barbiturates are used when indicated for restlessness or insomnia.

Nursing

The nursing of the cases presents a special problem. The patients are often irritable, unreasonable, and confused. They may be incontinent and wasted, and may vomit frequently. They sometimes refuse food, or are too ill to eat and have to be fed. By pushing food and fluid the

nursing staff can do much to improve the general condition of the patients, which otherwise becomes very poor. Bedsores develop easily, and very special attention must be given to the way in which a semiconscious or drowsy child lies. The constant crying out and the cephalic cry can be very disturbing. We attach importance to the frequent change of posture of these patients and feel that they should be sat up as soon as possible. If this is impossible they should be nursed prone for periods—with the object of preventing the exudate from settling heavily on the under surface of the cerebellum and round the foramina. Young infants who lie supine show this localization of exudate markedly, and it may yet be another factor in the bad prognosis of infants under 3 years of age.

It is our practice to give patients massage and passive exercises after eight weeks and to get them up after three months. Close co-operation with the physiotherapists will prevent much pain and delay in ultimately walking again.

In this unit we do all the lumbar punctures on a high narrow table, not in the bed. No local analgesic is used. Very difficult cases are premedicated with tab. "seconal," in dose according to age. The skin is sterilized with ether, spirit, and iodine; and thin, sharp lumbar-puncture needles are used (Howard Jones type). The latter are of various lengths from 2–3 in. (5–7.5 cm.), and are sterilized in packets in the autoclave in the operating theatre. After adequate scrubbing-up by the operator the punctures are performed without touching the shaft of the needle. No collodion or dressing is applied, but the skin is moved to break the track. A minimum of trauma and the avoidance of "bloody taps" are extremely important, especially in young infants. Patients need to be kept in hospital for five to six months and should then go to a suitable convalescent home for six months, but should still have cerebrospinal fluid examinations, probably fortnightly, for control.

Mention must be made of the problems which arise in regard to the relatives of the patients. These people are under great emotional stress, and this persists for several months in a way not commonly met with in other circumstances. The greatest tact and understanding are required from the nursing staff and others in dealing with these unfortunate people.

Results of Treatment

Table I details the cases admitted before May 28, 1948 (minimum observation period of surviving cases, 231 days). We hesitate to regard any case as certainly cured. Our longest-surviving case has been under observation for 560 days (18 months). The 36 patients who died include 9 who lived for seven days or less after admission. Of the 18 surviving cases 14 have a normal C.S.F. (Cases 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, and 18). All have been bacteriologically proved except Case 16. The remaining 4 survivors show the following features:

Case 15.—Clinically recovered. C.S.F. normal except for low sugar. (Further observation is required to estimate the significance of delayed return to normal of the sugar level.)

Case 13.—Clinically recovered. C.S.F. shows slight pleocytosis and slightly increased protein.

Case 11.—This case has relapsed twice, and, although there was apparent response to further treatment, has a C.S.F. which is abnormal in respect of protein (55 mg. per 100 ml.).

Case 17.—Has relapsed once. Otherwise resembles Case 11.

When clinical suspicion of relapse is aroused a fall in the C.S.F. sugar should be regarded as confirmation.

The poor prognosis in patients under 3 years of age is largely due to the rapidity with which they reach the advanced state of the disease, as is shown in Table VIII.

TABLE VIII.—*Cases under 3 Years*

Stage on Admission	No.	Survivors
Early	3	0
Middle	4	1
Advanced	10	0
Total	17	1

Table IX summarizes the results with reference to stage on admission, and distinguishes the 40 cases which had the standard course* of treatment from the remainder (admitted in the earlier part of our work before the superiority of "combined" treatment was established).

TABLE IX

Course of Treatment	Stage	Cases	No. Surviving
Intramuscular only	E	2	2
	M	4	0
	A	4	0
Total		10	2
Intramuscular, followed by intrathecal	E	2	0
	M	2	1
	A	0	0
Total		4	1
Combined I.T. and I.M. course (with minor variations shown in Table I)	E	14	8 (57%)
	M	16	6 (37%)
	A	10	1 (10%)
Total		40	15 (37%)
Overall totals		54	18 (33%)

These results emphasize the importance of the earliest possible diagnosis of tuberculous meningitis. Apart from streptomycin, the most important single factor in such success as we have had is to be found in the quality of the nursing. At Highgate Hospital Sister S. E. Robinson and the nursing staff have maintained the highest standard in this respect.

Summary

Diagnosis

The clinical and laboratory findings in 76 admissions are analysed. A diagnosis of tuberculous meningitis was made in 67 cases. The remaining 9 included five examples of a meningeal reaction in tuberculous subjects which may have been cases of serous tuberculous meningitis.

The problems of early diagnosis are discussed in relation to these cases. Mental apathy is an important early diagnostic feature. In 3 cases of tuberculous meningitis the C.S.F. was normal in the earliest stage in spite of clinically suggestive features. Diagnostically important C.S.F. changes are fall in sugar, rise in protein, and pleocytosis.

Prior to and within 48 hours of admission acid-fast bacilli were seen in the C.S.F. in 39 cases (58%). *M. tuberculosis* was recovered by culture and/or guinea-pig inoculation in 58 cases (87%). Diagnosis by one or both of these criteria was established in 62 cases (92%).

A positive history of contact with tuberculosis was obtained in 12 of 21 patients (57%) under 3 years of age, and in 11 of 46 patients (24%) over 3 years of age.

The commonest interval between the first appearance of signs or symptoms and the day of diagnosis was 8–15 days.

The Mantoux reaction was positive in 50 of 51 cases.

Abnormalities in the chest radiograph were seen in 50 of 66 cases.

Treatment

Cases were classified on admission as "early," "middle," or "advanced." Of these, 54 are considered, with a minimum observation period of 231 days (8 months). Forty cases received combined intrathecal and intramuscular streptomycin: of these, 15 (37%) survive—comprising 8 of 14 early cases

*With minor variations shown in Table I.

(57%), 6 of 16 middle cases (37%), and 1 of 10 advanced cases (10%).

Ten cases received intramuscular therapy only (in the early part of our work), and two survive. Four cases received intramuscular therapy followed by combined therapy: one of these survives.

Important factors operating against success are vascular changes in the brain and hydrocephalus. Further work is essential to assess the value of surgical intervention to combat the hydrocephalus.

Strains of *M. tuberculosis* isolated from 43 patients have not shown resistance to streptomycin.

Eighteen cases (33%) survive, and of these 16 show full clinical recovery—14 having entirely normal C.S.F. and 2 showing slight abnormalities. Two survivors have a history of relapse and show definitely abnormal C.S.F. The diagnosis has been confirmed bacteriologically in all except one of the survivors.

Apart from streptomycin, the most important aids to successful treatment are the rapidity of diagnosis and the quality of the nursing.

The value of intrathecal sulphetrone in addition to streptomycin is now being investigated.

We wish to thank the following for advice and help: Dr. J. M. Alston, pathologist, Archway Group Laboratory (who also kindly performed the streptomycin-sensitivity tests); Dr. A. B. Bratton and staff of the Central Histological Laboratory; the numerous technicians who helped, especially Mr. Hurst, of the Archway Group Laboratory, who gave much care and time to the pathological side of the work; Mr. J. V. Broad, otorhinologist; Dr. C. D. Coyle, medical superintendent, Archway Group of Hospitals; Dr. M. Daniels and Dr. P. D'Arcy Hart, of the Medical Research Council; Mr. A. Dickson Wright, consulting neurosurgeon; Mr. G. Dorling, surgeon, Archway Group of Hospitals; Mr. G. Ebbage, ophthalmologist; Dr. A. L. Jacobs, physician, St. Mary Islington Hospital; Dr. S. Oram, physician, King's College Hospital, London, in co-operation with whom Case 12 was treated; Dr. H. E. S. Pearson, physician, Highgate Hospital; and Dr. F. L. Rayner, radiologist.

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NASAL CARRIERS AND STREPTOCOCCAL TONSILLITIS

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In discussing the possible sources of streptococcal infection in puerperal fever Colebrook (1933) considered that the nasal carrier might prove of greater danger than the throat carrier. Hamburger (1944), in a study of the transmission of streptococcal infection in Army hospital wards, showed that the incidence of cross-infections did not necessarily show a close correlation with the throat-carrier rate and suggested that some carriers were more likely to spread infection than others. Further studies by Hamburger and his associates demonstrated not only that many more streptococci were expelled into the environment by nasal carriers than by throat carriers (Hamburger *et al.*, 1945a), but also that the majority of hospital cross-infections studied could be traced to heavy nasal carriers (Hamburger *et al.*, 1945b). Their findings led to an investigation of the relative importance of nose-blowing, sneezing, and coughing by nasal carriers in the dissemination of streptococci; it was shown that blowing the nose expelled the largest numbers of organisms and also resulted in sudden and heavy contamination of the hands (Hamburger and Green, 1946). These workers concluded that in certain situations, such as hospital wards, Army barracks, and boarding-schools, nasal carriers were of more importance in the spread of streptococcal disease than throat carriers because they caused a greater degree of environmental contamination. In such communities secondary reservoirs of infection—e.g., dust and bedding—are probably of special significance, and the part played by dormitories in the spread of scarlet fever, diphtheria, and streptococcal tonsillitis has been demonstrated (Dudley, 1923, 1926; Hamburger *et al.*, 1945b).

The outbreak of tonsillitis to be described illustrates the importance of both the nasal streptococcal carrier and the dormitory in the spread of infection in a residential school over a period of two terms. Symptoms were mild, complications few, and there were no rashes. Recovery was rapid and boys were usually discharged from the sanatorium in five to seven days.

The Outbreak

The school of 340 boys is housed in five separate buildings, which will be referred to as houses A–E. Each house has its own sleeping accommodation and common-rooms. D house has its own dining-room, but the boys from all other houses feed in the dining-room of A house, though each house has its own table. The classrooms are in a separate building and are shared by all the boys. Thirty-two of the 57 cases occurred in A house, where the sleeping accommodation consists of six dormitories holding 48 boys and 85 single rooms, the latter chiefly occupied by older boys. The boys of this house, whether sleeping in dormitories or in single rooms, mix freely with each other in the common-room and to some extent with the members of B, C, and E houses at meal-times. All boys meet other members of the school during classes, games, chapel, etc.

Epidemiology

The first case, H., occurred in A house on Feb. 16, 1948, and was admitted to the sanatorium with a sore throat and fever. A throat swab examined by another laboratory showed the presence of haemolytic streptococci, but these were not typed at that time, though later swabs grew haemolytic streptococci type 12. This boy returned to the school on Feb. 26; two days later a fresh case was reported, and further cases continued to occur almost daily till the end of the term on March 25. Cases of streptococcal tonsillitis due to the epidemic type were again observed within a few days of the beginning of the summer term, and 20 further cases among the boys occurred during this term, eight of them within the first two weeks. The last of these became ill on July 3. The accompanying Chart shows the daily incidence of cases of tonsillitis among dormitory and single-room boys of A house and the rest of the school. The overall pattern suggested an initial spread through A house, boys in dormitories especially being attacked, with a gradual extension to other houses towards the end of the Easter term. This general spread was continued during the following term until all houses had at least one case.

In all, 57 boys were attacked with acute tonsillitis—37 in the Easter and 20 in the summer term. Of the 37 cases in the first term 29 were in A house. The incidence of disease among boys in A house and the rest of the school for each term is shown in the Table, A house being divided

Table showing Incidence of Cases among Boys in A House (Dormitories and Single Rooms) and in Rest of School during Easter and Summer Terms

House	No. at Risk	No. Attacked		
		Easter Term	Summer Term	Total
A (dormitory) ..	48	19 (39·5%)	2 (4·2%)	21
A (single rooms) ..	85	10 (11·8%)	1 (1·1%)	11
B, C, D, E	207	8 (3·9%)	17 (8·2%)	25
Total ..	340	37 (10·9%)	20 (5·8%)	57

into those boys sleeping in dormitories and those in single rooms. During the Easter term the attack rate for boys in A house sleeping in single rooms, while higher than that for the rest of the school, was considerably lower than the attack rate for the dormitory boys. This difference is statistically significant; the probability of its occurring by chance is less than one in a thousand. The attack rate for each of the six dormitories in A house varied from 0 to 73%, though the numbers upon which these results are based are small. In addition to the 57 boys, five members of the staff had tonsillitis—two in A house during the Easter term and three in other houses the following term.

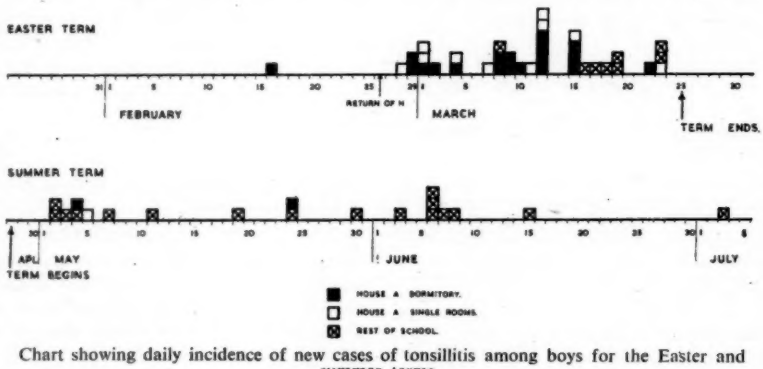

Chart showing daily incidence of new cases of tonsillitis among boys for the Easter and summer terms.

Field and Laboratory Investigations

The aid of the laboratory was sought in the early days of the epidemic, when the majority of cases were from the dormitories of A house. It was therefore decided to take nose and throat swabs from all cases still in the sanatorium and from boys sleeping in the dormitories of A house. This was done on March 12, and further swabbing of new cases and carriers was repeated at intervals till the end of the term.

Grouping and typing were carried out the first time haemolytic streptococci were isolated from the nose or throat of any boy and on all subsequent isolations, except when the interval between swabbings was only a few days. All strains were typed at the laboratory by Griffith's slide agglutination technique and reacted with sera of types 5 and 12. The type was confirmed as type 12 by Lancefield's precipitin method in a number of strains examined from cases and carriers.

Streptococcus pyogenes, type 12, was isolated from 43 out of 57 boys either during their illness or, in some of the earlier cases, after their return to school. Most of the cases with negative swabs were undergoing local chemotherapy at the time the swabs were taken. The epidemic strain was isolated from the five members of the staff who became ill. It was also readily obtained from the dust of two dormitories and two day-rooms in house A during the Easter term and from the dust of one of these dormitories towards the end of the Easter holidays.

Preventive Measures

These were directed towards reducing the dust content of the school buildings and sterilizing the noses of persistent carriers. Thorough suction-cleansing and scrubbing of the premises were carried out during the Easter holidays together with oiling of dormitory and common-room floors in A house. During the summer term all known nasal carriers and some throat carriers were each treated with penicillin–sulphathiazole snuff and penicillin throat sprays four times a day for fourteen days. The boys continued with their usual school activities during this time. The results of treatment are discussed later.

The Association of Nasal Carriers with New Cases

During the time the first case (H.) was in the sanatorium no further cases of tonsillitis developed in the school, but two days after his return to school a second boy became ill, followed by another six in the next three days. When H. was first swabbed fifteen days after his return from the sanatorium he was found to be a heavy nasal carrier, and it is reasonable to assume that he had been carrying streptococci in large numbers in his nose since his release.

A study of the distribution of 19 cases and four contact carriers among the six dormitories in house A showed that 18 of these occurred in three dormitories with a total population of 28 boys and only five in the other three dormitories housing 20 boys. The attack rates for these two groups were 64 and 25% respectively. The first case in each of the three dormitories comprising the first group was found to be a heavy nasal carrier (at the time of the general swabbing of boys in the dormitories) and at least one heavy nasal carrier was present in each dormitory during the time streptococcal infections were occurring. Nasal carriers were not found in any of the three dormitories of the group with the low attack rate, except in one dormitory for the last four days of the term.

Throughout the summer term only three nasal carriers from the previous term were detected; a fourth carrier was later identified when a boy with a nasal discharge was swabbed. Only one of these boys slept in a dormitory (one of those heavily infected the previous term), and all four carried for a short time only and responded well to a course of local chemotherapy. During this term the incidence of tonsillitis throughout the school was lower than during the previous term and no dormitory outbreaks occurred.

Persistence of the Carrier State

The work of Lemon and Hamburger (1946) has suggested that most symptomless nasal carriers are missed cases and that true contact carriers are unusual. No mass swabbing of the school was carried out, and it was not possible to form any estimate of the probable carrier rate, though six out of 33 dormitory contacts were carrying streptococci in the nose or throat on the occasion of the swabbing of all dormitory boys on March 12. Two of these developed tonsillitis three days later.

Type 12 streptococci were isolated from 35 boys during their illness—in 13 cases from the nose and usually from the throat, and in 22 from the throat only. Twenty-three of the 35 boys were swabbed ten days later; streptococci were obtained from the nose of three out of eight boys

previously carrying in the nose, and from the throat of 11 out of 15 boys carrying only in the throat.

Twenty-five boys were carrying type 12 streptococci in the nose or throat when last swabbed at the end of the Easter term. Twenty-one were re-swabbed six weeks later at the beginning of the following term and 12 were still carriers of the epidemic type—three in the nose and throat and nine in the throat only. The three nasal carriers and five of the throat carriers were each treated for fourteen days with penicillin–sulphathiazole snuff and penicillin throat sprays and all 12 carriers were re-swabbed at the end of the term. All the nasal swabs were then negative, though two of the eight treated boys and three of the four untreated boys were still carrying in the throat.

One boy had a clinical attack of tonsillitis in both the Easter and the summer term, and type 12 streptococci were isolated from the throat on each occasion. This boy was not one of those swabbed at the beginning of the summer term, so it is not known whether he was a throat carrier from the previous term. This experience is unusual and contrary to previous reports. The second attack was less severe than the first and streptococci were isolated in small numbers only, so it is possible that this illness was not primarily a streptococcal infection. The serum of this boy was not examined for anti-streptolysin titres.

Presence of M Substance

Typing by the precipitin technique was attempted on 10 strains isolated from throat carriers at the end of the summer term and seven gave a positive reaction. This was particularly well marked in strains from three boys who had been carrying for at least 130 days; strains from four new cases in the summer term gave either weak or negative results. These findings are of particular interest in view of the degradation or progressive loss of M substance during the carrier state found by Rothbard and Watson (1948). In this outbreak typing by the precipitin technique was done on only a small number of strains, but a greater proportion of weak or negative results were obtained with strains isolated from boys infected at the end of the epidemic than with those from the earlier cases. The clinical symptoms were also less severe in the later cases.

Discussion

The pattern of the daily incidence of new infections (see Chart) suggests that the epidemic spread fairly rapidly through A house during the three weeks after the return of H., a heavy nasal carrier. By the end of the Easter term it had extended to boys in other houses, and it continued in the rest of the school the following term. During the first 18 days after the return of H. 17 new cases occurred among the boys in dormitories and nine among those in single rooms, the number at risk being 47 and 85 respectively. Thirteen of the 17 dormitory cases occurred in three dormitories where 27 boys were at risk. It is clear that during this time boys in dormitories suffered more heavily than the others and that most of the cases came from three of the six dormitories.

Glover (1920) has drawn attention to the importance of overcrowding in sleeping-quarters as a factor in the production of high carrier rates in cerebrospinal fever. The relation of dormitories to the spread of scarlet fever and diphtheria in naval training establishments was later shown by Dudley (1923, 1926). It is possible that the closer contact of the dormitory boys, together with their younger age, was partly responsible for their high attack rate compared with those boys sleeping in single rooms. On the other hand, not all those dormitories were heavily attacked (in one dormitory no case occurred), although the spacing of beds, general ventilation, and ages of the boys in each were similar.

It is significant that during the eighteen days when most of the cases in A house occurred nasal carriers were associated with each of the three dormitories most heavily attacked and were not detected in the others. The first case in each of these dormitories was subsequently identified as a nasal carrier, and it was only after this boy's return to the dormitory that other cases occurred. In fact, a heavy nasal carrier was present in each of these dormitories during the time all except one of the boys became ill. One or more boys were carrying large numbers of streptococci in the nose for at least sixteen days in each of these three dormitories, and it is likely that a heavy streptococcal contamination of the environment took place during this time.

Streptococci of the epidemic type were readily isolated from the dust before the majority of dormitory infections had occurred. In addition to the possibility of infection being transmitted more or less direct from the carrier, the dormitory population was thus also exposed to the further risk of a heavily infected environment for several hours each night. Considerable dispersal of streptococci into the air and on to exposed clothing from floor dust and bedding would take place when the boys entered the dormitory at night and again during bed-making in the morning, and the attack rate under these conditions is likely to be high. The beds of the cases were not necessarily adjacent or in close proximity to the bed of the carrier, and the scattered spatial distribution of cases in the dormitories suggested general contamination of the environment. A study of the streptococcal content of the air and environment in wards and barracks occupied by streptococcal carriers has shown that the dispersal of organisms is commonly widespread and not limited to the vicinity of the beds occupied by carriers (Lemon, Loosli, and Hamburger, 1948). In this outbreak neither the streptococcal content of bedclothes or air nor the ability of the nasal carriers to infect their environment was investigated.

Out of 57 cases, however, only 15 came from the three dormitories heavily attacked during the Easter term. The remaining 42 were either boys sleeping in single rooms or sporadic cases in different dormitories. It seems evident, therefore, that a heavily infected dormitory environment was not the chief mechanism by which infection was conveyed to most of the school. Type 12 streptococci were recovered from the dust of the common-rooms in A house during the Easter term, and no doubt other infected environments played a part in spreading disease. All recognized nasal carriers were successfully treated in school during the summer term, but 12 fresh cases occurred during and after their period of treatment before the outbreak ceased. No swabbing of contacts was done during this term, and it is possible that an undetected carrier was responsible for the continuance of cases. Other factors concerned with the spreading of disease may have been infected dust in classrooms, the breathing of air infected by nose-blowing or the use of handkerchiefs, or the transmission of organisms from clothing or hands, either direct or from inanimate objects (Brown and Allison, 1937; Hamburger and Green, 1946; Dumbell *et al.*, 1948; Duguid and Wallace, 1948).

Epidemics of streptococcal tonsillitis in boarding-schools usually run on in the form of "dropping" cases to the end of the term (M.R.C., 1938), and this outbreak proved no exception. The occurrence of streptococcal infections of the same type in successive terms is not unusual, and Boissard and Fry (1944) attributed cases of scarlet fever in the autumn term and the following summer term to the same heavy nasal carrier. This boy was away from school for the intervening term, during which no cases occurred.

Experience of this and other epidemics has shown the frequent association of heavy nasal carriers with outbreaks of streptococcal tonsillitis in residential schools. It is important that nasal as well as throat swabs should be obtained from all cases, however mild; heavy nasal carriers should be treated until their swabs are negative. This is especially necessary with the single case or in the early stages of an outbreak before widespread contamination of the environment and the build-up of a carrier rate has occurred. During the holidays every effort should be made to sterilize the noses of persistent carriers and to disinfect school premises.

Summary

The epidemiological and bacteriological findings in an outbreak of streptococcal tonsillitis in a residential school are described. The outbreak extended over two terms, and 57 out of 340 boys were attacked.

All the early cases were in the same house as the first case, a heavy nasal carrier. A nasal carrier was also associated with each of the three dormitories with the highest attack rates during the time fresh infections were occurring. In most cases, however, the dormitory did not appear to be of special importance in the spread of disease, and the significance of this is discussed.

The early detection and isolation of heavy nasal carriers before widespread dispersal of infection has occurred is emphasized.

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SPONTANEOUS PERFORATION OF THE OESOPHAGUS

SURGICAL REPAIR, WITH RECOVERY

BY

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This rare condition has been the subject of a number of papers, chiefly dealing with single case reports. It is probable that it is not so uncommon as is supposed. Thus Eliason and Welty (1946) were able to record three cases seen by the senior author in the space of twelve months. The mortality until recently has been 100%, but Barrett (1947) and Olsen and Clagett (1947) have recorded recoveries after immediate operative intervention and repair.

In view of these successes it seemed timely to review the condition once more and to put on record two further cases, the second of which represents the third recovery that can be found in the literature; for, as Eliason and Welty (1946) say, "with improved techniques in anaesthesia, freer use of blood and plasma and effective chemotherapeutic agents, the limiting factor in the treatment of this condition is that of diagnosis."

Case 1

A man aged 41 was admitted to the West Middlesex Hospital at 4.30 a.m. on Dec. 10, 1941, with a diagnosis of perforated gastric ulcer. He had always enjoyed good health, apart from occasional indigestion, till 8.30 p.m. the previous day, when after a bout of vomiting he was stricken with severe pain in the lower chest and lumbar regions. A large midday meal of sausage pie was the only explanation the patient could give for the initial vomiting. There was no history of alcoholism. The pain, which was intense, had become more widespread; it was especially felt in the scapular regions and was made worse on breathing. His only other complaints were severe dyspnoea and an inability to lie flat in bed. The temperature was 101.2° F. (38.4° C.), pulse 100, and respirations 64. The blood pressure was 130/100.

Examination on admission revealed a cyanosed, breathless man of rather stout build. His breathing was shallow and obviously painful. At this time no abnormal physical signs were found in the lungs or cardiovascular system. His tongue was moist. The abdomen was tense and rigid but not tender. Rectal examination was negative. The diagnosis was thought to rest between a coronary thrombosis, lobar pneumonia, diaphragmatic pleurisy, and a ruptured oesophagus.

Morphine, ¼ gr. (16 mg.), was given and the patient placed in an oxygen tent. A radiograph of the chest taken four hours later revealed a bilateral pleural effusion, but further detail was obscured by respiratory movement, the patient being unable to hold his breath. By this time, some twelve hours after the onset of the catastrophe, the effusions were quite obvious clinically, and well-marked surgical emphysema had begun to develop in both supraclavicular triangles and was extending on to the chest wall. A confident diagnosis of spontaneous rupture of the oesophagus was made. The patient's condition, however, rapidly deteriorated and he died at 6 p.m. on the day of admission—i.e., about 22 hours after the onset of his illness. Before death the surgical emphysema had involved the whole of the upper half of the body and had closed both eyes. It was noted at the time how little relief this patient obtained from repeated doses of morphine.

Necropsy revealed a linear rupture 1 in. (2.5 cm.) long on the anterior aspect of the oesophagus 3½ in. (8.75 cm.) from the cardia. A large quantity of fluid was present in the posterior mediastinum, and 24 oz. (680 ml.) of blood-stained turbid fluid was found in the right pleural cavity and 18 oz. (510 ml.) in the left. No direct communication could be demonstrated between the mediastinum and pleural cavities. Apart from the tear the oesophagus had no disease of any kind, and the rest of the necropsy was essentially negative.

Case 2

A woman aged 63 was admitted to the West Middlesex Hospital on Dec. 1, 1947, with a diagnosis of ? perforated peptic ulcer. After a heavy meal of tinned meat, cheese, and milk at 8 p.m. the previous day she had vomited twice, and this was rapidly followed by agonizing pain starting in the region of the upper part of the sternum and rapidly spreading to the epigastrium. The pain, which was severe and constant, was made worse by breathing and movement. There was no history of previous indigestion or alcoholism.

Examination revealed a pale, dyspnoeic, rather stout woman in extreme shock. The temperature was 100.8° F. (38.2° C.), pulse rate 124, and respirations 32. The blood pressure was 85/60. The trachea was centrally placed; there were rales at the left base and dullness at the right base. Surgical emphysema was present over the upper sternum. The heart appeared normal. There was rigidity of the whole anterior abdominal wall, with pronounced tenderness in the epigastrium. Normal peristaltic sounds were audible and rectal examination was negative.

She was seen by Dr. J. A. Torrens, who suggested the diagnosis of ruptured oesophagus, and exploratory thoracotomy was advised in spite of the patient being *in extremis*.

It was decided to explore the right chest in view of the effusion on this side, and accordingly a large segment of the eighth right rib was resected and an excellent exposure obtained by means of rib-spreaders. At least 2 pints (1.14 litres) of

fluid resembling weak tea was evacuated from the right pleural cavity and a small rent in the mediastinal pleura demonstrated. This was widely opened and much blackish foreign material was removed from the posterior mediastinum. Fragments of food were identified, and one was impressed by the large quantity of undigested food present.

A small vertical linear tear 1 in. (2.5 cm.) in length was found on the right posterior wall just above the diaphragmatic orifice. This was rapidly closed with interrupted fine catgut sutures, and the posterior mediastinum and pleural cavity were cleansed so far as was possible. A soft corrugated rubber drain was inserted across the pleural cavity into the posterior mediastinum, and the chest wall was closed around this and a large tube to the pleural cavity. Penicillin, 500,000 units, was injected into the pleural cavity at the close of the operation and closed drainage instituted. Shock was treated by plasma, fluid requirements were met by intravenous glucose-saline, and infection was controlled by systemic penicillin and sulphamezathine. A radiograph two days later showed that the right lung had re-expanded, though there was now a little fluid in the left pleural cavity.

The mediastinal drain was removed and daily intrapleural injections of penicillin were continued. The intravenous drip was removed on the fourth day and a milk drip by means of a Ryle's tube substituted. At this time the left pleural cavity was aspirated and some 7 oz. (200 ml.) of straw-coloured fluid were obtained. The tube in the pleural cavity was shortened and finally removed on the twenty-first day after operation. The Ryle's tube was removed on the fourteenth day; but some leakage of milk occurred across the pleural cavity, so the tube was replaced. Two further trial removals were made, with further leakage, but eventually the Ryle's tube was discarded on Jan. 22, 1948, some eight weeks after operation. No further leakage occurred and normal diet was rapidly resumed. Excellent nutrition was maintained throughout by these means.

The patient was discharged on Feb. 18 with the wound almost healed, and when seen ten days later complete healing had taken place. Repeated chest films during the post-operative period had revealed a gradual return to normal, and a barium swallow on Feb. 26 showed an oesophagus of excellent calibre with slight dilatation of the lower end to the right, presumably due to adhesions. A letter from the patient at the end of June, 1948, told of perfect health and an ability to eat anything.

Incidence, Aetiology, and Clinical Course

Since the first classic case described by Boerhaave in 1724, Olsen and Clagett (1947) have been able to find some 60 cases in the world's literature. The majority of these were first diagnosed at necropsy, and only 14 were diagnosed before death. It should be made clear that these cases are those in which spontaneous perforation of a normal oesophagus has taken place, and that perforation of an oesophageal peptic ulcer or other disease process and rupture following instrumentation are excluded. The former inevitably fatal outcome allowed ample necropsy evidence that the oesophageal wall was indeed normal. There is no evidence to show that the muscle wall in these cases is exceptionally thin, and any congenital weakness can also be ruled out by the late onset of this catastrophe.

The presenting feature in almost all recorded cases is that of vomiting, and the sequence of events is probably as follows. The patient, after some dietetic indiscretion or a particularly heavy meal, begins to retch or vomit. There is a rapid rise in intragastric pressure, which is transmitted to the oesophagus. The sphincter at the cricoid level fails to relax and the oesophagus tears at its weakest point—that is, at the lower end of the oesophagus just above the diaphragm. Such tears have been produced experimentally and have also occurred in patients following crushing injuries to the abdomen, during convulsions, and after defaecation.

Barrett (1946), in a most comprehensive survey of the whole subject, has stressed the high percentage of alcoholics among these patients, and it is thought that, though alcohol may have a deleterious effect on the oesophagus, it is the vomiting and retching it produces which is the important factor. However, as he points out, this condition is unfortunately not confined to gluttons and alcoholics.

The pathological findings are remarkably constant. A linear longitudinal tear 1–8 cm. in length, usually on the left posterior wall, is most often present, and this involves the lower end of the oesophagus just above the diaphragmatic opening. The right posterior wall, as in Case 2 above, may be affected, and occasionally two tears have been present. It will be noted that the tear was on the anterior wall in Case 1. The posterior mediastinum becomes filled with food and regurgitated gastric contents, and the pleural cavities may be secondarily involved.

Males are predominantly affected, and Ridgway and Duncan (1937) were able to find only five females in the 35 cases recorded at that time. The middle-aged are most often affected, and my second case is the oldest of those recently reported.

As noted above, vomiting and retching usually initiate the process. This is rapidly followed by pain, variously located in the upper abdomen, the lower part of the sternum, or posteriorly on the left at the level of the lower thoracic or upper lumbar vertebrae. The pain is severe and agonizing, and has sometimes been described as tearing in character. A feature noted by several authors is the lack of relief obtained from morphine. The patient shows the usual features of shock, the pulse being rapid and the temperature subnormal, though the latter may be raised. Dyspnoea, pain on breathing, and cyanosis are commonly present, and the respiratory rate is increased. The patient is unable to lie down, some relief being obtained by sitting up in bed.

In the very early stages there may be tenderness and guarding, amounting to board-like rigidity in the epigastrium, and many of these cases have come to laparotomy on the erroneous diagnosis of a perforated peptic ulcer. Very shortly two phenomena develop which give the surest clues to the diagnosis. First, unilateral or bilateral pleural effusion appears. Initially this is probably reactionary to the highly irritating gastric contents in the posterior mediastinum, but soon gastric juice itself appears in the pleural cavity, either because the tear involves the pleura or because it bursts through the pleura, and may readily be recognized on aspiration and analysis. Secondly, in many cases surgical emphysema has developed; this begins over the upper part of the sternum and then spreads to the neck and face.

Should all the classical features be present, diagnosis should not be difficult provided the condition be known to the clinician.

The chief conditions for which spontaneous perforation of the oesophagus has in the past been confused are perforated peptic ulcer, dissecting aneurysm of the aorta, coronary disease, acute pancreatitis, acute cholecystitis, and spontaneous pneumothorax. A brief consideration of the main symptoms and physical signs should lead to a correct diagnosis in the typical case.

In untreated cases death rapidly occurs, the majority dying within 48 hours. In a few cases the process has been much slower, and at least three such cases have ultimately survived. The mortality in the past for the acute cases which form the vast proportion has been 100%. However, Graham (1944) and Frink (1947) have reported cases of late drainage in patients who appear to have localized the spreading infection, with ultimate cure.

Barrett (1947) and Olsen and Clagett (1947) have reported successful repair in the early stages, and Case 2 above is a further instance. In all three cases direct approach to

the lower oesophagus through a long thoracotomy wound, with primary repair of the tear and adequate drainage followed by intensive chemotherapy and the use of antibiotics, has resulted in a successful issue. Eliason and Welty (1946) suggested posterior mediastinotomy as a possible approach, but the majority would, I think, favour the transpleural operation.

In my opinion feeding difficulties in the post-operative period can be better overcome by a nasal indwelling tube than by further adding to the patient's discomfort by the performance of a gastrostomy or jejunostomy. It is well, however, as Frink (1947) suggests, to check the position of the tube, as this has been known to pass through the rent into the mediastinum.

It seems to me that if a correct and early diagnosis is made and is followed by urgent operation and energetic after-treatment many of these cases can be saved.

Summary

Two further cases of spontaneous rupture of the oesophagus are recorded, with recovery after operation in one.

The main pathological and clinical features are reviewed and a plea for earlier diagnosis and surgical treatment is made.

I wish to thank Dr. J. A. Torrens for his assistance with the management of the second case, and Dr. Patricia Chippindale, my house-surgeon, for her painstaking care and enthusiasm in the after-treatment of this same patient.

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RUPTURE OF INTESTINE DUE TO NON-PENETRATING INJURY

UNUSUAL ACCIDENTS FROM A MECHANICAL SAW

BY

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While most surgeons are familiar with injuries of the fixed portions of the bowel due to severe crushing of the abdomen, it is less common to encounter isolated rupture of the mobile loops following on what at first appears to be a relatively slight injury.

Case 1

On June 21, 1948, a woodworker aged 59 was sawing lengths from a beam 4 in. (10 cm.) square by means of a circular saw. At about 3 p.m. one of these sections was caught by the revolving blade of the saw and flung over the guard, striking him in the left lower quadrant of the abdomen and throwing him backwards for a distance of about 4 ft. (1.2 metres).

He was doubled up with intense pain at the time and was taken to hospital—where he was catheterized, clear urine being obtained—and kept under observation for two hours. No abnormality was detected in the abdomen. At the end of this time his pain had almost gone, his pulse rate was 80, and he was allowed to leave. He walked back to his works (about 500 yards—457 metres) and wished to resume work, but was sent home, walking a further 200 yards (182 metres). He experienced little pain at the time; there was slight nausea, but no vomiting throughout. He went to bed without having his evening meal.

About 9 p.m. (six hours after injury) abdominal pain returned, mainly in the left iliac fossa, and became steadily worse. Just after midnight he was admitted to Bethnal Green Hospital. Though in considerable distress from abdominal pain, he was not shocked. Blood pressure was 160/110, temperature 98° F. (36.7° C.), pulse 110. The tongue was dry and furred; the abdomen was immobile, the knees were drawn up, and rigidity was board-like. Tenderness was maximal over the left iliac fossa. No trace of bruising or abrasion could be seen. Bowel sounds were absent; the abdomen was resonant, with some alteration of percussion note in the left iliac fossa. Per rectum there was some resistance and definite tenderness in the recto-vesical pouch.

Laparotomy under general anaesthesia 11½ hours after injury revealed about a litre of free seropurulent fluid in the peritoneal cavity and some fibrinous exudate in the left iliac fossa. There was hardly any bruising of bowel or mesentery, but an isolated rupture of the jejunum was found about 9 ft. (2.75 metres) from its upper end, situated on the anterior surface ¾ in. (1.9 cm.) from the mesenteric border and about the diameter of a lead pencil. From this opening gas, fluid, and a piece of lettuce were escaping. Bacteriological examination of the peritoneal fluid subsequently proved sterile on culture. Apart from two patches of fibrinous exudation presumably due to irritation by the intestinal contents, the jejunum, ileum, sigmoid, and transverse colon showed no abnormality. The opening in the jejunum was closed by two layers of Lembert sutures in the transverse axis of the bowel and the peritoneal cavity was drained through the left iliac fossa.

Post-operatively the patient was treated by gastric suction and intravenous fluids with systemic penicillin for five days. Bowel sounds returned in thirty-six hours. Convalescence was uneventful; the patient got up on the tenth post-operative day and was discharged on the eighteenth day.

Case 2

A woodworker aged 42 was working with a mechanical saw on Sept. 10, 1948, when a piece of timber flew up, hit him in the abdomen, and knocked him down several feet away. He was doubled up at first, but after about forty-five minutes was able to walk into the casualty department of a hospital. Examination revealed no obvious abnormality, and he was advised to go home and rest.

During the night severe abdominal pain developed and he was admitted to Hackney Hospital twenty hours after injury. At that time there was no shock and the pain had passed off, but there was evidence of peritonitis. Although he was thought to have a rupture of the small gut, intervention was considered unjustifiable in view of the interval since the injury, and he was treated with chemotherapy. Although his condition improved for a few days it then deteriorated, and he died seventeen days later.

At necropsy he was found to have general peritonitis resulting from a complete rupture of the transverse colon and a longitudinal tear into the duodenum.

Discussion

Bodenheimer (1945) has also described the case of another woodworker who was struck while using a mechanical saw. Here again the abdomen showed no marks, bruises, or abrasions, but the diagnosis was confirmed by the presence of air seen under the diaphragm on *x*-ray examination. An isolated rupture was found in the lower ileum and was successfully sutured.

Rupture of a hollow viscus is the result of a sharply localized blow upon a distended loop of bowel which is unable to slip out of the way, owing either to its peritoneal relations or to pathological fixation by adhesions or hernia. The abdominal musculature may be off guard as the result of alcoholic intoxication or the unexpectedness of the sudden blow.

At first the rupture may be very slight, even incomplete, and temporary inhibition of peristalsis may allow plugging of the leak with fibrin (Zachary Cope). Resumption of

intestinal peristalsis after a lapse of some hours then leads to further leakage and spreading peritoneal irritation.

The diagnosis in the first 12 hours before the onset of diffuse peritonitis may be very difficult, as physical signs may be absent or the condition may be mimicked by retroperitoneal haematoma or contusion of the coeliac plexus; in case of doubt radiographs will show gas under the diaphragm. Delay is dangerous; the mortality without operation is from 93 to 100% (Kornblith): even in patients operated on in the first six hours it is 35% and after 12 hours 75%.

At operation it is important to examine the whole of the intestine to exclude multiple perforations: single perforations are closed by suture, but multiple injuries may necessitate resection, especially if complicated by haematoma of the mesentery. Drainage is advisable after the first eight hours, although in our patients the fluid was sterile. Modern chemotherapeutic treatment should greatly reduce the mortality from peritonitis.

I am indebted to Mr. W. P. Greenwood for the opportunity of treating Case 1 and to Dr. J. Flapan for his assistance with the anaesthetic; also to Mr. R. F. Reed for the details of Case 2.

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Medical Memoranda

An Unusual Case of Frontal Sinusitis

The following case is uncommon enough to be placed on record.

CASE REPORT

A man aged 23 attended the out-patient department because he had had a moderately severe headache for three weeks after an ordinary cold. He was quite positive that he had had no ear, nose, or throat symptoms at any time before this attack.

On examination he was found to have slight swelling and oedema over the left frontal sinus, a scarcely perceptible downward displacement of the left eye (with a resultant diplopia which he had not noticed until his attention was drawn to it), and pus in his nose. The temperature was normal and the skiagram showed opacity of the left maxillary antrum and haziness of the left frontal sinus. (The outline of the latter was quite sharply defined.)

He was admitted at once and was treated by calomel by mouth, frequent hot-air baths, and inhalations, and a course of penicillin (100,000 units three-hourly) and sulphamezathine was started. Twelve hours after admission the temperature rose to 100° F. (37.8° C.), but by the third day it had dropped to 99° F. (37.2° C.). On the third day, however, it was reported that he had had two epileptiform convulsions and several attacks resembling petit mal.

It was decided to open the frontal sinus externally without further delay and to do an intranasal antrostomy. Owing to the large size of the frontal sinus it was necessary to make an extensive incision in the line of the eyebrow and to extend the inner end vertically over the forehead for 2 in. (5 cm.). A flap was thus turned back, allowing a wide exposure. The whole of this large sinus was filled with pus, which had the consistency of cream cheese. The mucous membrane was hypertrophied and grossly degenerated. After thorough cleansing of the sinus, beads of pus were seen oozing through the posterior wall, recurring a few seconds after swabbing. It was now necessary to remove the posterior wall, and at the first cut through the bone enough fluid pus gushed out to fill an eggcup. The dura was covered with granulations over a circular area about 2 in. (5 cm.) in diameter, so that enough of the posterior wall had to be removed to leave a surrounding margin of healthy dura. Penicillin was sprayed over the whole area and into the sinus cavity that remained. It was also generously sprinkled with sulphanilamide powder. A tube was passed down the fronto-nasal duct and sewn into the nose; another was sewn in the angle of the incision near the inner canthus, and the incision was closed.

Treatment consisted of instillations of penicillin (200,000 units three-hourly) through the tubes, intramuscular injections of penicillin (100,000 units three-hourly), and a full course of sulphamezathine. The temperature became normal immediately after the operation and did not rise again. The above treatment was discontinued after the eighth day, and the tubes were removed on the tenth day. The patient made an uninterrupted recovery and was discharged at the end of three weeks.

Bacteriological examination showed "Gram-positive bacilli—very degenerated. The organisms could not be cultured." This report was not very helpful.

The most interesting points about this case are the short history, the absence of severe symptoms till after admission, and the very gross pathological changes. Such cases are said to recur quite often, and it is too soon to reckon that this patient is completely cured. It is felt, however, that recovery without heavy doses of penicillin would have been impossible.

G. W. MOREY, M.B., B.S., D.L.O.

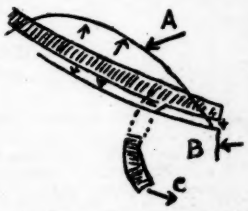
A Method of Closing the Femoral Canal

The articles by Butters and Kidd and the annotation on them in the *British Medical Journal* of Oct. 23, 1948 (pp. 743, 745, 750) prompt me to describe yet another method of closing the femoral canal.

Many will have read and practised the skin repair closure of the inguinal canal described by Mair (*Brit. J. Surg.*, 1946, **34**, 42). It was whilst dealing with a femoral hernia and an associated direct inguinal hernia that another method of closing the femoral canal occurred to me. The technique used in this particular case was as follows.

METHOD

The approach was from above, and at the making of the skin incision an ellipse of skin was removed for use as the graft. After the canal had been opened in the usual way the femoral sac was isolated, secured as high up as possible, ligated, and removed. The transversalis fascia was then plicated to cover the bulge of the direct hernia. The skin bridge was now sunk in the gap between the conjoint tendon, inguinal ligament, and symphysis pubis. In this case, however, the graft was fashioned Y-shaped, the stem being anchored to the pubic bone and the upper limb being sutured carefully to the free edge of the conjoint tendon (see Diagram). The lower limb, however, was passed through the femoral canal *en bloc* and stitched to the pectineus fascia. The lower edge of the stem and upper limb of the Y were stitched to Poupart's ligament behind the cord, the "bridge" finally being secured by suture at its proximal extent to the internal oblique. The wound was then closed in layers.



A, Free edge of conjoint tendon; B, Symphysis; C, Stitched to pectineus.

DISCUSSION

Owing to force of circumstances I am unable to make any substantial claims for the efficacy or otherwise of this method, the actual number of cases dealt with in this manner being fewer than ten. It is, however, submitted that this method has two outstanding advantages. First, the comparative absence of tension (such as in stitching conjoint tendon to inguinal ligament) is a desirable object in effecting union of structures. Secondly, the actual filling of the femoral canal provides the only reliable means of obtaining a complete and final closure. Here one may speculate on the final fate of the free skin graft. Whether it lives or dies, it is at least certain that it forms a solid collagenous plug. In addition, Butters draws attention to the fact that in as many as 7% of cases operated on from below inguinal herniae subsequently developed.

Whatever the merits of the various approaches, the technique described can be performed from above only by opening the canal. It is, however, submitted that a "bridge" of this nature, which does not weaken any of the surrounding structures (cf. Kidd), does a lot to prevent the recurrence of any type of hernia in this situation.

ARTHUR WEBB-JONES, F.R.C.S.Ed.

Reviews

DIAGNOSIS OF VIRUS DISEASES

Diagnostic Procedures for Virus and Rickettsial Diseases. By various authors. (Pp. 347; illustrated. $4.00.) New York: American Public Health Association, 1790, Broadway. 1948.

Virus diseases *can* be diagnosed and studied in the laboratory; many of them are of such importance that in the future the appropriate techniques will have to be available in many hospital and public health laboratories and not only in research institutes. This book is a mine of information, for its 17 chapters are all written by specialists, who tell how much can be done and is being done in the U.S.A. The specialists have been "given their head" to describe how they deal with the viruses which are their own special study, and no attempt is made to insist that exactly similar methods are described where one technique is applicable to several viruses. Some duplication is thus inevitable.

Some of the authors have interpreted their instructions liberally. Thus, the article by Meyer and Eddie on psittacosis, and some of the others, give much interesting assorted information about the virus concerned. On the other hand, the chapter by Parker on variola and vaccinia is almost too concise. That on poliomyelitis by J. R. Paul is full of useful information on the caging and handling of experimental monkeys. Phlebotomus (sand-fly) fever seems rather out of place in such a book, for human volunteers are necessary for any experimental study. Trachoma, influenza, mumps, rabies, yellow fever, and rickettsial diseases are among the other more important subjects discussed. Workers in diagnostic and in research laboratories will have many occasions to seek—and find—in this book the facts they need.

C. H. ANDREWES.

INFERTILITY

The Childless Marriage. Its Cause and Cure. By Edward F. Griffith, M.R.C.S., L.R.C.P. (Pp. 206; illustrated. 8s. 6d.) London: Methuen and Company. 1948.

Sterility and Impaired Fertility. Pathogenesis, Investigation, and Treatment. By Cedric Lane-Roberts, C.V.O., M.S., F.R.C.S., F.R.C.O.G., Albert Sharman, M.D., Ph.D., M.R.C.O.G., Kenneth Walker, M.A., M.B., B.C., F.R.C.S., F.I.C.S., B. P. Wiesner, D.Sc., Ph.D., F.R.S.Ed., and Mary Barton, M.B., B.S. Second edition. (Pp. 400; 96 figures; 2 plates. £1 4s.) London: Hamish Hamilton Medical Books. 1948.

Both these works were first published in 1939, and their second editions represent extensive revision made necessary by the many advances in knowledge and alterations in outlook which have occurred in the last decade. Dr. Griffith's book is not strictly a second edition, for it first appeared under a different title—*The Childless Family*. It is intended for the lay reader, is compact and cheaply produced, but contains a lot of information—perhaps too much. Many of the more strictly medical sections, which the author advises the lay reader to skip, could well be omitted. Although there are few, if any, errors in fact, the outlook is not always scientific, and some of the statements might be misleading to anyone without medical knowledge. The association between abortion and seminal faults is overstated to the extent that it might cause unjustifiable alarm, and the account of continence in the male leading to sluggishness of spermatozoa could have unfortunate repercussions. The recitation of individual cases is not convincing, nor are the illustrations of hysterographs, some of which are alleged to demonstrate uterine hypoplasia. Is it possible, at any rate without a specially controlled technique, to recognize this condition by this means? Nevertheless the book has much to commend it, and any couple who read and understand it will be left with a relatively wide knowledge of infertility, its causes, how it should be investigated and by whom, and the prospects for its cure. The final chapter, which occupies 40 pages, comprises a very full account of artificial insemination, setting out the arguments for and against, and giving many useful references. This alone justifies a place for the book in the general practitioner's library.

Sterility and Impaired Fertility is written on a different plane and prescribes for the general practitioner and consultant. It is one of the best books of its kind and already has a high reputation. The new edition has the same format as its predecessor, although the text is considerably modified in places. Dr. Mary Barton has now joined the team of authors and makes her presence felt by a new emphasis on cervical function and sperm penetration of cervical mucus. Other changes include a simplification in the technique and interpretation of semen analysis, the rejection of hormone analysis as a practical measure of real value, and a more cautious outlook on the value of hormone therapy and on the interpretation of tubal patency tests. Among some useful appendices may be mentioned a description of a new modification of the method of estimating pregnanediol in the urine, and a short account of irradiation of the pituitary and the ovary by Dr. Anthony Green. It is rather surprising to find that the carbohydrate in semen is still referred to as glucose when most workers now consider it to be mainly fructose. Moreover, there appears to be no mention of precoital douches of either sodium bicarbonate or glucose as a method of treatment. Although this may be regarded as old-fashioned and empirical it is widely used and at least deserves discussion. These, however, are small matters when considered in the perspective of this otherwise wide and authoritative account of fertility and infertility, an account which deserves to continue to be looked upon as a standard work for reference.

T. N. A. JEFFCOATE.

PUBLIC HEALTH IN THE U.S.A.

Public Health Administration in the United States. By Wilson G. Smillie, A.B., M.D., Dr.P.H., Sc.D. Third edition. (Pp. 637; illustrated. $6.50 or £1 12s. 6d.) New York and London: The Macmillan Company. 1947.

The title of this book might suggest a discourse on the details of administration of public health in the United States with fairly ample reference to public health law, but this is not the author's line of approach. He discusses many diverse problems in hygiene. In a short first part he outlines the scope of public health functions; Part II is entitled "Administrative Control of Communicable Diseases," Part III "Basic Activities of a Health Organization," and Part IV "Organization of Public Health Programs."

The student of medicine will appreciate the section on infectious diseases, where the author describes not only the action taken by a health department in respect of various diseases but also their epidemiology, clinical features, and differential diagnosis. The reader is thus led to realize that sound administrative action must be based on the clinical and epidemiological features of a disease. The author makes a plea that there should be no rigidity of action in dealing with cases of infectious disease. He expresses the accepted modern view that infectious-diseases hospitals should be part of a general hospital scheme, since to-day their chief value is the advantage the patient derives from skilled treatment rather than the protection of the public by his isolation. As is to be expected, the discussion on epidemiology is especially directed to American problems, such as the differing incidence and manifestations of diseases in white and coloured peoples. He considers at length such diseases as malaria and rabies, whereas he makes little mention of bovine tuberculosis; his account of the work of port health departments, especially in relation to the spread of infectious disease, is not satisfactory.

The author lays great emphasis on the work of the public-health nurse. He discusses the ways in which her services may be utilized by a health department and whether each nurse should be limited to a special branch of public health nursing. Throughout the book he draws attention to the duty of health departments to educate the public, and he points out that in this respect there are virgin fields to be explored. Public-health departments in Britain may find this subject of particular interest now that they are being relieved of some of their former functions. The sick individual, in his view, is not the responsibility of the health department, and he emphasizes the value of "well child conferences." The author maintains that, ideally, prenatal service should not be a function of the health

department, since the medical supervision of the mother during pregnancy should be given by the physician who will have charge of the delivery. However, he realizes that this ideal cannot always be attained, and in these circumstances he stresses the importance of administrative co-ordination between the responsible authorities. He includes notes on such topical subjects as the rhesus factor, epidemic diarrhoea of the newborn, and fluorine in relation to dental caries. He defines geriatrics as the study of persons over 40 years of age, and indicates the value of periodic health examinations (or health inventories).

The chapters on administration, towards the end of the book, will give European readers a conception of the peculiarities of central and local government in a federation of States. The author uses the discussion on this subject to emphasize many of the more important points raised earlier in the text. Possibly the non-American reader would have benefited from the administrative information being included at the beginning rather than the end of the book. Illustrations are numerous and good, and—what is of considerable importance in this type of book—it has an adequate index and comprehensive lists of references on the wide range of subjects discussed.

R. T. BEVAN.

A SURGEON'S LIFE

The Trent and I Go Wandering By. Stories of over fifty years of my life in Nottingham. By R. G. Hogarth, C.B.E., D.L., J.P., F.R.C.S., Hon.LL.D.Ed. Foreword by Lord Webb-Johnson. (Pp. 144. 12s. 6d.) Nottingham: Cooke and Vowles, Ltd., The Thoroton Press, St. James's Street.

The *Trent and I* should be assured of a welcome in and around Nottingham, for since 1894 there are few local institutions and events and very few prominent citizens with whom Mr. Hogarth has not had professional and apparently inevitably friendly relations. It is a very discursive book, rambling over the life of a successful surgeon and devoted citizen. It fully supports what the author says of himself, "I have enjoyed life." His versatility is amazing, and he seems to have worked as hard at his hobbies as he did at his profession. His medical career has been bound up with the Nottingham General Hospital, which he has seen enlarged and improved almost out of recognition since the days when he was a house-surgeon. His story of how he took the risk of a plunge into consulting surgery from a successful general practice is vividly told, as is the struggle to persuade his hospital to establish a pay-ward. This met with considerable opposition which momentarily disturbed his relations with the management of the hospital.

The older members of our Association remember Mr. Hogarth as its President in 1926 at one of our most successful Annual Meetings. It was a happy thought to include in this volume his memorable presidential address, full of common sense and delivered with immense gusto. His fame as a surgeon was recognized far afield and by good judges such as Lord Moynihan and Lord Webb-Johnson, who contributes an appreciative foreword to the book.

The influence of sport on Mr. Hogarth's career is well brought out—a successful athlete, a more than average cricketer and footballer, an enthusiastic motorist in the early days. Indeed, there is scarcely a branch of sport in which he has not indulged and been proficient. He gives the palm to fishing, especially salmon-fishing. Fishing, he says, "has been my principal joy and pleasure—but I have derived much the same from my work, and what more can a man ask?"

There is an eloquent and sensible chapter on "Importance of Health," with some shrewd reminders of the tendency in democracy to ignore the value of self-discipline, as shown for example in the shocking way in which our streets and parks are desecrated by litter. One notes that he has the usual surgeon's view of the value of "a bottle of medicine"—and he speaks with a knowledge of both sides. I was glad to note once again in the presidential address his quip about "the waters of healing laid on at the main" in Harley and Wimpole Streets. It is a happy book, especially welcome to those who know the author and his wife, to whom both he and Lord Webb-Johnson pay a graceful tribute.

ALFRED COX.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Krebsmetastasen. By H. E. Walther. (Pp. 560. 60 Swiss francs.) Basle: Benno Schwabe. 1948.

A monograph, with many references to the literature, on metastasis of malignant growths.

The Clinical Examination of the Nervous System. By G. H. Monrad-Krohn, M.D., F.R.C.P. 9th ed. (Pp. 459. 16s.) London: H. K. Lewis. 1948.

An introductory manual, with many illustrations and diagrams.

A Shetland Parish Doctor. By H. P. Taylor, J.P., M.B., C.M. (Pp. 136. 10s. 6d.) Lerwick, Shetland: T. and J. Manson. 1948.

The late Dr. Taylor's autobiography, with illustrations from his hand.

The Chemist and Druggist Year Book, 1949. (Pp. 666. No price.) London: Morgan. 1948.

A compendium of information useful to pharmacists.

Vitamins and Hormones. Edited by R. S. Harris and K. V. Thimann. Vol. 5. (Pp. 478. $7.50.) New York: Academic Press. 1947.

Articles by various authorities on recent advances in knowledge.

Bone Marrow Biopsy. By S. J. Leitner, M.D. English translation revised and edited by C. J. C. Britton, M.D., Ch.B., D.P.H., and E. Neumark, M.B., B.S. (Pp. 433. 42s.) London: J. and A. Churchill. 1949.

An illustrated monograph with extensive bibliographies.

Abdominal Operations. By Rodney Maingot, F.R.C.S. 2nd ed. (Pp. 1,274. 84s.) London: H. K. Lewis. 1948.

A detailed account of technique for the surgeon.

Operative Dental Surgery. By J. B. Parfitt, L.R.C.P., M.R.C.S., F.D.S.R.C.S., and W. E. Herbert, L.R.C.P., M.R.C.S., F.D.S.R.C.S. 6th ed. (Pp. 454. 30s.) London: Edward Arnold. 1948.

A textbook for dental students.

Company Finance for Everyman. By L. Mundy, O.B.E. (Pp. 84. 4s.) Oxford: Pen-in-Hand. 1948.

A simple explanation of how to understand balance sheets.

An Introduction to Cardiology. By Geoffrey Bourne, M.D., F.R.C.P. (Pp. 264. 18s.) London: Edward Arnold. 1949.

An account of the chief aspects of cardiovascular disease for students and practitioners.

Psicoanalisi della Vita Istintiva. By J. Flescher. 2nd ed. (Pp. 439. No price.) Rome: Scienza Moderna. 1948.

A study intended for medical men and educationists.

Principles of Biological Assay. By C. W. Emmens, D.Sc., Ph.D. (Pp. 206. 21s.) London: Chapman and Hall. 1948.

A guide for the research worker or analyst on the planning of tests.

Practical Public Health Problems. By Sir William Savage, B.Sc., M.D. 2nd ed. (Pp. 197. 14s.) London: J. and A. Churchill. 1949.

Discussion of such topics as the supervision of water supplies, milk, and other foods, the investigation of enteric outbreaks, and house inspection.

The 1948 Year Book of General Medicine. Edited by P. B. Beeson, M.D., and others. (Pp. 821. 21s.) London: H. K. Lewis. 1948.

Abstracts of recent papers, with editorial comment.

A Short Practice of Surgery. By Hamilton Bailey, F.R.C.S., F.A.C.S., F.I.C.S., F.R.S.Ed., and R. J. McNeill Love, M.S., F.R.C.S., F.A.C.S., F.I.C.S. 8th ed. (Pp. 628. 52s. 6d. for 5 parts, not sold separately.) London: H. K. Lewis. 1948.

This part includes accounts of the rectum, abdominal hernia, and the urogenital system.

Ocular Signs in Slit-Lamp Microscopy. By J. H. Doggart, M.A., M.D., F.R.C.S. (Pp. 112. 21s.) London: H. Kimpton. 1949.

Includes many coloured illustrations.

BRITISH MEDICAL JOURNAL

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A TRUST FUND

The Representative Meeting in June last year referred to the Council a number of motions on the formation of a medical trade union or some other form of organization for the better protection of the interests of the medical profession. Since then the subject has been raised several times in the correspondence columns of the *Journal*. Behind the demand for a medical trade union is the feeling that if the Association had had trade union powers of applying sanctions and granting benefits it would have been in a stronger position in its conflict with the Government in the first half of last year. The demand is, in effect, an expression of dissatisfaction with the B.M.A.'s limited powers in its conduct of negotiations from 1942 to 1948. Behind this demand there is also desire to put more power into the hands of the profession in any subsequent conflict with the Government over the terms and conditions of service in the N.H.S. The Council of the B.M.A., in response to the request of the Representative Body, set up a committee on the constitutional position of the Association, and its report appears in this week's *Supplement*. The report is a long and closely reasoned document which, based on legal opinions of eminent counsel and the advice of the solicitors of the B.M.A., describes the present constitution of the B.M.A. and its advantages and disadvantages; the legal position of a trade union; the possibilities of converting the Association into some other form of organization; and the question of establishing some other form of organization linked to the B.M.A. in a way that would secure identity of interest. The legal arguments are not easy to follow, especially when it is observed that, like doctors, eminent lawyers see fit to differ. The principal conclusions, however, are that it is not possible to convert the B.M.A. into a medical trade union; that even if this were possible the advantages of trade union status are illusory because medical men are neither workmen nor masters and medicine is not a trade; and, finally, that to provide an effective weapon in future controversy a trust fund should be established under the control of a Medical Guild which, legally separate from the B.M.A., can use it for objects not defined in the Memorandum of Association.

The B.M.A. is registered with the Board of Trade as a "Company not for profit," and is thus enabled to dispense with the commercially tinged description "Limited." In granting the Association this licence the Board of Trade insisted on the inclusion in the Memorandum of Association of the proviso to Clause 3 which sets out the objects for which the B.M.A. was established, and Clause 4 which defines and restricts the manner in which the B.M.A. shall dispose of its income and property. The principal object of the B.M.A. is "to promote the medical and allied sciences and to maintain the honour and interests of the medical profession." An important part of the interests of the medical profession is finance—the adequate payment of medical men for the work they do, linked as this is with the status and prestige of a learned profession in society. When this interest is threatened the B.M.A. is by its constitution limited in the action it can take, being unable to impose restrictions on, or to grant financial benefit to, members who acting on the advice of the B.M.A. suffer financial loss. It was because of this second disability that the Independence Fund, subscribed to by fewer than 6,000 doctors, was established in the early part of last year. It would seem that the B.M.A. is within its constitutional rights to *advise* but not to *organize* collective opposition, but in an acute conflict the dividing line between advice and organization might be hard to define; and any one person could seek an injunction against the B.M.A. on the grounds that its funds were being used in contravention of its Memorandum, and the Association would have to withdraw from the conflict for so long as the matter was being considered by the courts. But whatever the form of organization which might represent it the medical profession as compared with any other section of the community suffers from one big disability, if it may be so termed—namely, that it cannot strike in the sense of withholding its services from sick persons in need of them. If it did that it would cease to be a profession, and would cease to be worthy of its calling. It is, however, open to the medical profession to resign from an organized service such as the N.H.S. and at the same time to continue to look after the sick. If such a grave decision were taken the problem for the doctor would be one of securing payment for work done, or, rather, receiving financial support until the conflict precipitated by resignation had been resolved. It was to this end that the National Insurance Defence Trust was built up by insurance practitioners under N.H.I. and the Independence Fund established last year. It is to this end that the Council is recommending to the Special Representative Meeting to be held on March 29 that a Fund should be set up under the Medical Guild.

It should not be necessary to set forth in the columns of this *Journal* the advantages of the constitution of an Association which has a proud record of promoting the medical and allied sciences over the past 117 years, but if it changed its nature and became a medical trade union would it in this way overcome the disadvantages it is at present presumed to suffer from? Under the Trade Union Acts the principal objects of any trade union are statutory objects. These are defined as the regulation of the relations between workmen and masters, or between workmen and workmen, or between masters and masters; in this regulation of relations restrictive conditions can be imposed upon the conduct of any trade or business, and benefits may be provided to members. In the opinion of Counsel medical men are neither masters nor workmen, however employed. Medical practice does not come within the definition of "trade," but could be held to be a "business." The statutory objects of a medical trade union would therefore be (1) the imposition of restrictions on the conduct of the business of its members, and (2) the provision to them of benefits. In taking action to defend its rights in a dispute an ordinary trade union

has some degree of legal immunity under the Trade Disputes Act of 1906. In this Act a trade dispute is defined as one "between employers and workmen, or between workmen and workmen." In the opinion of Counsel a medical practitioner is not a workman in the meaning of the Act, nor is he employed in trade or industry. A medical trade union, therefore, would not have (and does not have) this important legal safeguard provided by the Trade Disputes Act of 1906. The medical profession is also in the difficulty that it has hitherto strongly opposed a "closed shop" policy. Its best instincts and traditions would make it hesitate to use the trade union sanction of expelling a doctor from a medical trade union in order to deprive him or her of opportunity for employment.

As it is registered under the Companies Act the Association cannot transform itself into a trade union. If it were to wind up its affairs it would not be able to transfer its assets to a trade union which might take its place. The B.M.A. might free itself from its present restrictions by surrendering its licence to dispense with the word "Limited" in its title and thus be able to alter its Memorandum. This, however, might not be possible if 15% of the members objected; the Association would still have no immunity from legal proceedings, and power to impose restrictions and provide benefits could not become the principal objects of association. During any dispute any one person could still lay an injunction against the B.M.A. on the alleged grounds that these had become principal objects, and that it was therefore in fact acting as a trade union; the Association would be put out of action until the matter had been settled in the courts.

The Council, having dismissed as unrealistic or impossible the conversion of the B.M.A. into some other form of organization, looked into the question of setting up another and parallel body. It considered, for example, the possibility of establishing a medical trade union, membership of which would be conditional on membership of the B.M.A. and *vice versa*. Such a union might because of his failure to conform to policy expel a member, who would then be in the legally impossible position of being expelled from the B.M.A. for failure to conform with the policy the Association by its constitution would be prevented from enforcing. That being so, and even granted that membership of the trade union would be conditional on membership of the B.M.A. but not *vice versa*, the possibility or probability is that the two bodies would be unequal in numbers of members. This is an additional argument to the other ones brought forward against the proposed value of trade union status. The Council has been up against the difficulty that parallel bodies, like parallel lines, might be expected to meet at infinity. It is therefore recommending to the Representative Body that there shall be established a trust fund known as the British Medical Guild. This would be a legally independent entity lawfully able to organize and not merely advise the profession in the event of a dispute with the Government, and able to distribute financial benefits. The Guild would be controlled by a board of trustees, and this board could be composed of members of the Council of the B.M.A. The proposed British Medical Guild is closely similar to the Independence Fund set up last year. The Guild, in fact, would provide the B.M.A. with weapons which its present constitution prevents it from using. If the Representative Body decides to adopt the suggestion made, then it will presumably support all efforts to secure contributions to the Fund. The relationship of this Fund to the National Insurance Defence Trust has yet to be examined.

The problem is intricate, and made not less so by the legal complexities which surround it. The position of the doctor in the community is in the last resort determined by the fact that he belongs to a learned profession dedicated to caring for the health of the people. The medical profession is older than parliaments and ministries, and whatever the changes in the organization of its services it has always retained its essential character. It is therefore important that, whatever alterations there might be in the form of professional organization, nothing should be done to impair the status and prestige of medicine and those of its traditions which are other than the passing changes of fashion. Apart from the difficulties and disadvantages of converting the B.M.A. into a medical trade union, such a transformation of a voluntary association of medical men and women might end in altering for the worse the essential nature of a great calling. Nevertheless, in a world in which hard economic facts increasingly obtrude themselves the profession needs an economic weapon as a measure of defence. The British Medical Guild is designed to produce this.

SPREAD OF STREPTOCOCCAL TONSILLITIS

Streptococcal sore throat, when unaccompanied by a rash, is not notifiable, and because of this school outbreaks frequently go unrecorded. But even when outbreaks of scarlet fever or streptococcal tonsillitis have been carefully investigated little or no progress has been made in determining the mode of spread or the best methods of control. Throat-carrier rates among contacts could be high or low, and, if some outbreaks ceased abruptly, most went on with cases cropping up throughout the term despite precautionary measures. It has been shown that the spread of streptococcal infections in wards where patients with burns, scarlet fever, and puerperal sepsis were being nursed was associated with gross contamination of the dust and air by the infecting streptococci, and the success of dust-suppressive measures in controlling secondary streptococcal infection in measles wards testified to the importance of this mode of spread. The next step was to find out how the dust became heavily infected.

Although Gordon[1] had shown in 1932 that convalescent cases of scarlet fever with purulent nasal discharge were most likely to give rise to "return" cases and clinicians had long known that the case or carrier of nasal diphtheria was a dangerous source of diphtheria infection, it was the work of Hamburger and his colleagues[2-6] in Army camps during the late war which demonstrated clearly the importance of the heavy nasal carrier in spreading streptococcal infection. After they had confirmed the finding of earlier

[1] *J. Amer. med. Ass.*, 1932, **98**, 519.
[2] *J. infect. Dis.*, 1944, **75**, 58.
[3] Ibid., 1945, **77**, 68.
[4] Ibid., 1945, **77**, 96.
[5] Ibid., 1946, **79**, 33.
[6] Ibid., 1948, **82**, 72.
[7] *Mon. Bull. Min. Hlth*, 1944, **3**, 160.

workers that patients with strongly positive throat cultures expel only relatively few organisms during talking or coughing, they showed by various tests—cultures of nose-blows, hands, bed patches, and dust—that the heavy nose carrier, whether or not he has any clinical signs of infection, nearly always profusely contaminates his surroundings, and that in fact he disperses about 80 times more haemolytic streptococci than the corresponding throat carrier. They further showed that nose carriers appeared to be responsible for outbreaks of streptococcal infection in hospitals and barracks and, in one instance, for a large-scale food-borne outbreak.

The question remained whether streptococcal infections spread among civilians, particularly among children in schools and nurseries, in the same way as among troops in training. Various recorded outbreaks have suggested that it is so; for example, Boissard and Fry[7] reported that cases of scarlet fever occurred in a school in the autumn and summer terms when a boy with severe nasal catarrh was present, but not in the spring term when the boy was absent. In this issue of the *Journal* Drs. G. T. Cook and D. Munro-Ashman provide further evidence of the importance of the nasal carrier in the spread of streptococcal tonsillitis in a residential school. The outbreak began when a boy, subsequently shown to be a heavy nasal carrier, returned to his dormitory about the middle of the spring term after an absence of ten days with sore throat and fever. During the rest of the term 19 cases of illness caused by the epidemic type of organism and 4 contact carriers occurred in six dormitories of the house to which the first boy belonged; 18 of these cases came from three dormitories holding 28 boys in all (an incidence of 64%), and in each of these three dormitories the first case was found to be a heavy nasal carrier. The incidence was 25% in the other three dormitories of the same house and 11.8% in the single rooms, where the boys were older and in less close contact with each other. Although the premises were vacuum-cleaned and scrubbed during the Easter holidays, further cases occurred throughout the school in the summer term and continued even after known nasal carriers were treated successfully with penicillin-sulphathiazole snuff. However, there may have been undetected nose carriers, since no mass swabbing was carried out, and there is no mention of examination or disinfection of the blankets, often an important reservoir of haemolytic streptococci in an infected environment.

The important lesson from this and similar studies is that nose as well as throat swabs should be taken from all close contacts when search is being made for the source of streptococcal infection. If this swabbing can be done early, when only 2 or 3 cases have been reported, and a heavy nose carrier is identified as a likely focus, his removal and treatment may well prevent further spread. Too often, however, the infection is allowed to drag on for some weeks before action is taken, by which time there may be many carriers and a grossly contaminated environment. Large-scale swabbing, isolation of nose carriers, and a thorough "spring-clean" followed by disinfection of the premises and bedding then become necessary. It may be added that outbreaks of infection do not necessarily follow the discovery of nose carriers or streptococcal contaminated dust. There are other variables—virulence of the organism, the nature and resistance of the community, and the accessibility of organism to host—which play their part, but the potential danger of the nasal carrier cannot now be denied.

RELIEF OF PAIN IN CHILDBIRTH

The report entitled *Maternity in Great Britain*,[1] on which we commented in a leading article a few weeks ago, exposed many deficiencies in the maternity service. The Press and politicians find this a topic of constant interest and it is not without reason that women will demand that more attention be given to the problem. The main complaint of the mothers interrogated in this survey, which was made jointly by the Population Investigation Committee and the Royal College of Obstetricians and Gynaecologists, was that no attempt was made to relieve the pains of labour. In the Metropolitan boroughs, for instance, only 5% of the mothers confined at home and 48% of those confined in hospital were given relief. The report on pain in childbirth prepared by a subcommittee of the Medical Women's Federation and published elsewhere in this issue therefore appears at an opportune time. If ever a body of women would insist on adequate analgesia during childbirth it would surely be women doctors at their own confinements. There would also be a natural demand on their part for the best environment, accoucheur, and midwife. Yet when this report is examined some disquieting facts emerge. It must have been disappointing for the committee that only 196 replies were received from 300 medical women. The forceps rate of 27% in first deliveries may be due to the fact that most of the mothers were attended by obstetric specialists. In half of these cases the reason for instrumental delivery could not be stated. The perineum was repaired in 69% of first deliveries (normal and abnormal), and 18 of the mothers did not have an anaesthetic for this. The incidence of episiotomy is not stated, and local anaesthesia was used to repair the perineum on only 16 occasions.

It is surprising that 32% of the primiparae were given no analgesic during the first stage. On the other hand 90% received an anaesthetic during the second stage. Most women suffer the greatest pain towards the end of the first stage, when the os is about four-fifths dilated. It is at this time that analgesic drugs can bring such great relief. It is not clear why the subcommittee included gas-and-air as an anaesthetic—a claim never made by Minnitt. A mixture of chloral and potassium bromide was prescribed in 80 labours and was ineffective in 38. The combination known as "mothers' mist." is still widely used in this country: the single dose of bromide is not pharmacologically effective, and the dose of the third ingredient, tincture of opium, is often 7½ minims (0.45 ml.), which is equivalent to $\frac{1}{16}$ gr. (4 mg.) of morphine. Is there any justification for prescribing this amount? It would seem better to give 30 gr. (2 g.) of chloral. Pethidine was still on trial when this investigation was being made, and doubtless this is the reason why it was given in only 44 deliveries. Not unexpectedly, a mother who was having her third child found "veganin" useless.

[1] *Maternity in Great Britain*, 1948, Oxford University Press, London.
[2] *British Medical Journal*, 1948, **2**, 948.

This group of women is a privileged section of the community in that the standard of obstetric care they receive is much higher than that available to the majority of expectant mothers. The questionary showed that opinion was almost unanimous in favour of pain relief in childbirth. Yet a considerable number (24%) said they would have liked more complete relief, and this despite the fact that many were being attended by obstetric specialists. The reasons for this should be sought. Are obstetricians disinterested in obstetric analgesia? Could more effective drugs have been given? Did the mothers react abnormally? The drugs and analgesic apparatus at present available to doctors and midwives are effective provided they are given at the right time and to women who have been properly trained during pregnancy.

It is now generally agreed that the better the mother is prepared during pregnancy for her confinement the less analgesic drug she will need. There is a tendency to rely overmuch upon the hypodermic needle or the tablet as part of a stereotyped system to relieve the pain of uterine contractions. Sometimes the doctor or midwife forgets that the mother is an individual who should and often wants to take an active part in her own delivery. The search for the ideal analgesic must continue, but further investigation should be made of those methods in which explanation and preparation for childbirth play an important part in antenatal care. Midwives conduct most of the deliveries in this country, and they should be able to instruct expectant mothers in the art of muscle control and relaxation. Pain can be relieved in well-trained mothers with the minimum amounts of drugs.

TUBERCULOUS MENINGITIS

Each successive report on the treatment of tuberculous meningitis with streptomycin gains added value from the length of the follow-up of surviving cases and the more mature judgment made possible by longer experience. In this issue we publish an account by Drs. J. Rubie and A. F. Mohun of a study of tuberculous meningitis and its treatment with streptomycin at Highgate Hospital, one of the centres established for this purpose by the Medical Research Council in July, 1947. Perhaps the strongest impression made by this paper is the necessity for early diagnosis and the skill which may be required in reaching it. Particularly instructive is the series of nine patients from whom treatment was withheld, despite meningism, cerebrospinal-fluid lymphocytosis and increased protein, and, in five cases, a suggestive history and known tuberculous foci elsewhere. All these patients recovered spontaneously from whatever cerebral condition they had. It seems that the surest guide to the experienced observer is the mental state: these patients were for the most part alert and happy, whereas the child with undoubted tuberculous meningitis is even at an early stage listless and apathetic. The Mantoux test may be helpful, in that a negative result is a strong point against the diagnosis: in this series the test was negative in only one of the proved cases. Among cerebrospinal-fluid changes a falling chloride content has now by general consent been ousted from its pre-eminent position as a diagnostic sign by a subnormal sugar content, which makes its appearance earlier and is thus of much greater value. This being so, it should be generally observed that the collection of part of the specimen in a bottle containing sodium fluoride as a preservative is necessary if dependable information is to be obtained on this vital point.

The general results of streptomycin treatment were such as are now expected—recovery (fortunately complete so far as can be seen in 16 of the 18 patients concerned) in about one-third of all cases. The relation between the stage of the disease at which treatment is begun and its outcome is evident—11 of the successful cases being classified as "early," six as "middle," and only one as "late." The effect of age on prognosis is also clear: all the survivors were between 3 and 17 years old. The bad prognosis in infancy is attributed both to the difficulty of eliciting specific complaints in very small children and to the more rapid progress of the disease. Of three patients over 17 years of age all died, presumably because of extensive disease elsewhere—a much more common finding in the adult with meningitis than in the child. The results of different treatment schedules conform to those on which present recommendations by the Medical Research Council are based. Intramuscular administration alone was found to be inadequate; daily intrathecal injection is also necessary, at least in the first month. The present arduous treatment programme occupies five months, two being given to combined treatment, two to intramuscular injection only, and one, the fourth, being a rest period. It cannot be said that the best way of using streptomycin for this disease has yet been defined with certainty: dosage and duration of treatment are not standardized, and some workers have claimed that intrathecal injection alone is necessary. Perhaps the most hopeful line of advance is the combined use of streptomycin with another chemotherapeutic drug such as a sulphone. Such studies are being pursued in several countries, and Rubie and Mohun are themselves using sulphetrone in this way. The results of this modification will be awaited with interest.

THE RISKS OF PREMATURITY

The importance of prematurity in relation to stillbirths and neonatal deaths has once again been stressed in a series of articles by Drillien,[1 2] who has analysed the records of nearly 8,000 births at the Simpson Memorial Pavilion, Edinburgh, during the years 1943 to 1945. Complications of pregnancy, especially hydramnios and antepartum haemorrhage, were found to increase the prematurity rate, stillbirth rate, and neonatal death rate. With a spontaneous vertex delivery the combined foetal and neonatal mortality for premature infants was 21 times greater than for mature infants. Breech delivery increased the risk of death for both premature and mature infants, while the application of low forceps appeared to increase the risk for mature babies only. The principal causes of death in premature babies were prematurity alone, asphyxia, and infections, while in mature babies congenital defects accounted for the majority of deaths. The risk of death from all causes was far greater for the premature than for the mature infant. No diagnosis of a pathological condition was made in over half the stillbirths, but the principal ascertained causes were congenital defects and asphyxia, the former being responsible for more deaths

[1] *J. Obstet. Gynaec. Brit. Emp.*, 1947, **54**, 300, 443.
[2] *Arch. Dis. Childh.*, 1948, **23**, 69.
[3] Hess, J. H., Mohr, G. J., and Bartelme, P. F., *The Physical and Mental Growth of Prematurely Born Children*, 1934, Chicago.
[4] Levine, S. Z., and Gordon, H. H., *Amer. J. Dis. Child.*, 1942, **64**, 274.
[5] *J. R. sanit. Inst.*, 1947, **67**, 409.
[6] Baird, D., *J. Obstet. Gynaec. Brit. Emp.*, 1945, **52**, 217, 339.

in the premature and the latter for more deaths in the mature infants.

By carefully considering the records of each stillbirth and neonatal death Drillien attempted to assess the primary cause in each case. She concluded that congenital defects and erythroblastosis were responsible for nearly 24% of all stillbirths and neonatal deaths, toxaemia and antepartum haemorrhages for 30%, hazards of delivery for 20%, while all other causes accounted for only 6%. In 20% of the cases the cause was unknown. The investigation was completed by a follow-up of 103 premature and 174 mature infants. There was a significant difference between the ages at which premature and mature infants reached the various "milestones," and the average weight at any given age was found to rise steadily with increasing birth weight. In this follow-up no allowance was made for the degree of prematurity or for social conditions. Drillien points out that authors[3,4] who have taken the degree of prematurity into account and who have compared the development of premature infants with their mature siblings have found no striking difference between the two groups after the first few years of age, and she suggests the possibility of an economic handicap continuing to act on the premature infant after birth.

Drillien's figures are of necessity based on a selected section of the population, but they are a valuable addition to the other published analyses. Crosse,[5] for instance, investigated the records of 85,305 births which took place in the city of Birmingham during the years 1943 to 1946. She found that the prematurity rate was 6.9%, and that 42.8% of the stillbirths and 57.8% of the neonatal deaths occurred in premature infants. The causes of prematurity, stillbirth, and neonatal death were similar to those reported by Drillien, with the exception that mortality due to erythroblastosis was lower, such cases naturally being collected in hospital. The influence of social and economic factors on prematurity, stillbirth, and neonatal death was demonstrated by Baird,[6] who analysed the records of 10,728 Aberdeen births and grouped them according to the different social classes. He found that the rates of prematurity, stillbirth, and neonatal death were all much greater in the poorer classes than in the better-off. The commonest obstetric condition associated with prematurity was toxaemia, and this was twice as common among the poor as the well-to-do.

All these investigations show that if the risks of prematurity are to be further reduced the interests of individual midwives, doctors, antenatal clinics, and hospitals must be merged in the general interest of obtaining the best result for each mother and her baby.

"DOGGER BANK ITCH"

Occupational diseases are often given graphic names which indicate the cause or the striking features of the lesion. "Dogger Bank itch," recently described by Bonnevie,[1] is an eczematous dermatitis observed in North Sea fishermen, particularly those fishing the Dogger Bank area, and is due to contact with the sea chervil, a seaweed-like animal colony, the coralline *Alcyonidium hirsutum*. It is rare for live animals to cause contact dermatitis, which is generally the result of chemical or vegetable irritants. The sea chervil is landed, sometimes in large quantities, in the nets with the fish and is thrown back into the sea. Bonnevie describes the case of a young Esbjerg fisherman who had been fishing the Dogger Bank for four years. The dermatitis started on his hands and cleared rapidly when he went ashore; on returning to fishing increasingly severe attacks developed, with blistered and oedematous eruptions on the hands and arms, face and legs. Some men have had recurrences of the condition after attendance at fish auction rooms and as a result of journeying in an inspection ship over the Dogger Bank area without actual fishing. Bonnevie suggests that inhalation of the allergen from the atmosphere may be responsible for such relapses. Patch tests have been performed with material obtained from the inner and outer surfaces of the sea chervil and from expressed juices; these were all positive in the affected subjects but negative in controls. The disease has figured in the Danish Workmen's Compensation Act since 1939.

[1] *Acta allerg.*, 1948, 1, 40.

AFTERCARE OF THE HOSPITAL PATIENT

There are many signs that hospitals are now taking a close interest in their patients at home and at work, as well as in the ward or out-patient department. In the work of aftercare there is some doubt about when the hospital almoner should withdraw and the health visitor take over. An attempt by the Ministry of Health[1] to lay down a line of demarcation has been criticized by the Institute of Almoners, which does not agree with the instruction that "the almoner will not visit patients in their homes." In a leading article *The Times*[2] takes the side of the almoners on the grounds that so long as a patient is the responsibility of a hospital the social aspects of the patient's care should remain with the medical social workers on the hospital staff just as the medical care rests with the hospital doctors. Commenting on this, Dr. Fraser Brockington[3] suggests that the difficulty is due to the fact that the health services have been divided administratively into three parts. "The time will come," he writes, "when such a division will no longer exist. Until then there must be a clear definition of responsibilities."

Almoners were first employed at hospitals to assess charges and sometimes to recover them; now they provide for the hospital medical staff the "background histories" which are needed for the full understanding of individual cases of illness. Health visitors' duties have also been widened. At one time they were employed solely for the purpose of reducing infant mortality; now under the National Health Service Act the welfare of the whole family, in health and sickness, is their concern.

Patients returning home from hospital can certainly be given valuable help by experienced social workers, whether almoners or health visitors. Already some hospitals, including one or two smaller ones which had never employed almoners, have been using health visitors for various purposes. In one area a health visitor was able to find accommodation for some elderly patients who had been occupying hospital beds for many months. In Cardiff health visitors have been calling regularly on patients discharged from hospital after treatment for diabetes and peptic ulcer.[4] The scope of this work is wide, and the public will certainly appreciate any help of this nature which can be given. It would be a pity if the administrative line which separates hospital from health authorities gradually assumed the appearance of a railing with spikes. The right course is to make the best possible use of the almoner's training in social case-work (whether or not this involves home visits) and of the health visitor's training in nursing and health education. There may be a problem in theory, but there should certainly not be one in practice wherever health authorities and hospital management committees are ready to co-operate in order to provide the best service for the patient.

[1] *Ministry of Health Circular* 160, 1948.
[2] *The Times*, Dec. 15, 1948.
[3] Ibid., Jan. 7, 1949.
[4] Davies, M., *J. Roy. San. Inst.*, 1948, **68**, 308.

VIRUS RESEARCH AND THE VIRUS PROBLEM

LONDON UNIVERSITY LECTURE

Dr. Pierre Lépine, of the Pasteur Institute, Paris, gave a special University of London lecture at the London School of Hygiene and Tropical Medicine on Feb. 8.

The first study of the physical properties of viruses, he said, was directed to the determination of their size. As early as 1923 it was shown that groups of viruses were of different sizes. Here he referred to the important work on ultra-filtration carried out in this country by W. J. Elford from 1929 onwards. Colloid membranes were prepared with a given size of pore, and determinations of the size of many of the commoner viruses were made. The methods which had been developed since had served only to make more precise those original measurements. All that the early workers were concerned with was an accessory physical characteristic—namely, ability to pass through filters. Later experiments showed that some virus particles were of different shape, but none of these observations controverted the opinion that the viruses were essentially minute micro-organisms. Dr. Lépine mentioned the work of Stanley, who regarded the tobacco mosaic as a giant molecule and explained how virulence and infection came to be associated not merely with a definite chemical structure but with physical properties. This became the widely accepted view, and was generalized rather hastily to include all viruses.

The virus problem was being attacked by chemical as well as by physical methods, but Dr. Lépine disregarded the former, as they belonged essentially to a special branch of research into proteins. He reviewed the physical methods which had contributed to a knowledge of the virus. The use of filtration with membranes remained the simplest and most direct laboratory procedure, but another useful procedure was centrifugalization, which gave accurate information about the size and density of the virus and revealed the size distribution. Delicate but remarkably efficient instruments had been built for this work, which had been carried out under difficult conditions during the past few years at the Pasteur Institute.

The virus density measured by ultra-centrifuging could be compared with the size obtained by filtration. He described another procedure which had been developed for estimating virus size. This consisted of placing on a revolving machine an ampoule containing a virus the titre of which was known and irradiating with radium or *x* rays. Later the titre was again worked out and it was ascertained how much of the virus had been destroyed by a given amount of radiation. It was inferred that the whole of the virus substance was radio-sensitive and that the structure was homogeneous, but in animal strains it appeared that the sensitive area of the surface was not more than half the whole, and therefore the existence of different zones appeared likely. The structure of the virus, therefore, was not homogeneous.

Electron Microscopy

The coming of the electron microscope had made it possible to check visually the morphological data. In some cases the electron microscope had revealed structures infinitely more complex than might have been expected from the use of other methods. Dr. Lépine here showed a photograph of an electron microscope which was built in secrecy in Paris during the German occupation. It had now been turned into a commercial instrument, and was in use at the Pasteur Institute. By means of this instrument it was possible to sort out the viruses in groups according to size. At the top of the size scale (300 mμ) were such elementary bodies as the psittacosis group of viruses, which in structure and behaviour were closely related to the rickettsia. It seemed necessary to conclude that the viruses of this group had an organization not unlike that of the bacterial cell. Then, going downwards in the scale, came the animal poxes, and then the phages, their morphological characteristics suggesting that they were mere collections of molecules. By centrifugalization it was possible to break the phage up into its individual parts, the head, consisting of a nucleus within an envelope, and the tail. There was less detailed knowledge about a virus such as the influenza virus, but there was reason to think that it was not more homogeneous than the phage. Further down were more elementary forms of virus, the virus of foot-and-mouth disease (diameter 10 mμ), and insect viruses.

Animal viruses had a wide range of size and structure, but none of them seemed to answer the description of a "giant molecule." Of plant viruses more than two hundred were known, and among these only about a dozen had been obtained as homogeneous protein found in living matter. All these viruses contained pentose sugar, which in the case of tobacco mosaic had proved to be ribose. Plant viruses of low phosphorus content were rod-shaped, and tended to take the form of long chains. Those with a higher phosphorus content formed particles.

Under the electron microscope it was possible to see that the crystals in the tobacco mosaic were the result of an agglomeration of particles tending to collect in long chains.

This invisible world, said Dr. Lépine in conclusion, comprised a vast and varied population, from the nucleoproteins up through organisms of increasing complexity. The notion of viruses as giant molecules was very attractive to some, but he thought it introduced a misleading simplification of the problem.

TRACER ELEMENTS IN BIOLOGICAL RESEARCH

Radioactive isotopes are being used increasingly in biological research. Much work has been done on the subject in this country, and more in the United States. Professor F. A. Paneth, F.R.S., in two recent lectures to the School of Pharmacy in London, stated that experiments were taking place with a number of hitherto unfamiliar chemical elements. In the biological laboratory of the near future there might be in use seven or eight elements so far scarcely known, but which might become as prominent in this field as radioactive phosphorus, the first isotope produced for medical research, or radioactive carbon, the classical example of a tracer element in biological experiment. He mentioned in particular "astatine," a chemical element behaving in physiological experiments very much like iodine. Little was known about it as yet, but it was said to offer interesting possibilities in view of its characteristic concentration in a particular part of the body.

The most extensive researches were now being carried out with iodine rather than with carbon or phosphorus. Professor Paneth showed charts illustrating how in animal experiments iodine was taken up by the thyroid and to a much smaller extent by the liver. Other charts showed the relatively diffuse distribution of radioactive phosphorus as compared with the heavy concentration of radioactive strontium in the bone. Strontium was deposited almost exclusively in the bone shaft and hardly at all in the osteoid matrix, whereas plutonium gave a heavy deposit in the matrix and appeared only superficially in the shaft. The use of all these radioactive substances, as Professor Paneth reminded his audiences, was potentially dangerous. If too much iodine were used, for example, the physiological condition seemed to alter and the substance acted more or less as a toxin. One of the surprises of recent years had been the smallness of the amount of radioactive substance which might have a dangerous effect, and it was not without significance that many of the early workers in the radioactive field died from pulmonary disease. Consideration had also to be given to the choice of the right isotope for biological experiments. The half-life must not be too long nor the tracer too strongly active.

Professor Paneth concluded by referring his hearers to the latest sources of information on the subject, adding, however, that the development of the new science was so rapid that no publication could keep abreast of it. The most recent compendium was the fourth report of the U.S. Atomic Energy Commission.

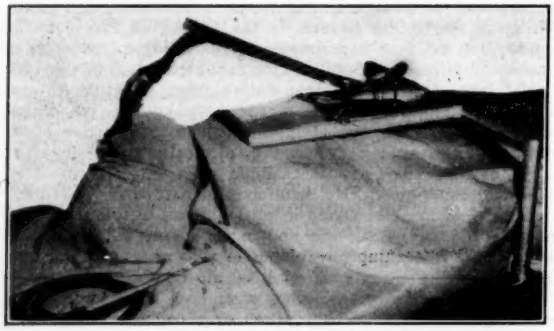
The British Council arranged for Dr. K. J. Powell, anaesthetist to Sheffield City General Hospital, to go to Italy on Feb. 21 to give a three months' course on anaesthesia at the Istituto de Patologia Chirurgica in Rome and to lecture in Florence and Milan. He has been invited to go to Rome by the Director of the Institute, Professor Valdoni, and the visit is a sequel to a wartime meeting. While Dr. Powell was stationed near Florence with a neurosurgical unit he acted as anaesthetist for Professor Valdoni at the Italian civilian hospital in Florence.

Preparations and Appliances

AN IMPROVED JACK FOR THE BOYLE-DAVIS GAG

Mr. TERENCE BANHAM, assistant E.N.T. surgeon, Royal Cornwall Infirmary, Truro, writes: Various methods have been devised for maintaining the airway when using the Boyle–Davis gag for tonsillectomy. Negus's jack (*B.M.J.*, Sept. 19, 1925, p. 523) and the Guy's model suspension rod with ratchet chest-plate are perhaps the best known. These methods are satisfactory in the majority of cases, but they are not ideal, particularly in children. They both exert pressure on the chest, and the Guy's method, though the more secure, utilizes a strap round the patient's neck which by pressure on the neck veins tends to interfere with the venous return from the head. This disadvantage can be overcome by using a much longer strap passing round the head of the table, but the plate still exerts pressure on the chest and, in very small children, on the upper abdomen.

The appliance here described makes use of the Guy's chest-plate but overcomes its disadvantages by holding it rigidly just above the patient. The stand is made of ¼-in. (1.8-cm.) diameter galvanized iron tubing bent as shown in the photograph. The rectangle holding the chest-piece is filled in by



brazing a metal plate to the three sides, forming a platform. The side members of this rectangle are slotted and the Guy's ratchet breast-plate is attached to the top of the platform by two bolts with winged nuts, so that it can be moved backwards and forwards. The two vertical rods fit into holes which are standard fittings on many operating-tables (i.e., Watson Williams's E.N.T. table, made by Chas. Thackray, and the Allen and Hanbury's operating-table). If this rod is a fairly tight fit the whole apparatus is held rigidly by the backward pressure of the suspension rod. On the A. and H. table the rods fit into a sliding collar which is supplied with a lock-nut.

This appliance has been used for many months in the ear-nose-and-throat theatre of the Royal Cornwall Infirmary and has been found entirely satisfactory. It was designed and made for me by the hospital engineer, Mr. Fred Toy.

The first number of the *International Digest of Health Legislation* has recently been published. It will be recalled that the duties and functions of the Office International d'Hygiène Publique have been transferred to the World Health Organization. One of these duties was the publication of the *Bulletin Mensuel de l'Office International d'Hygiène Publique*, which first appeared in January, 1909. The *Bulletin Mensuel* continued its work until December, 1946, and published a great deal of information about public health legislation, communications and vital statistics, as well as many technical reports. In future the technical reports will be incorporated in the *Bulletin of the World Health Organization*, while what was the first section of the *Bulletin Mensuel* has now become the *International Digest of Health Legislation*. The *International Digest* will print translations of, or extracts from, the texts of the most important laws and regulations dealing with public health and related subjects in different countries. There are separate editions in English and French and each edition is issued in two forms—as a bound volume, and as a collection of separate fascicles in a loose cover.

Reports of Societies

THE HEART IN ENDOCRINE DISEASE

At a meeting of the Section of Endocrinology of the Royal Society of Medicine on Jan. 26 Dr. WILLIAM EVANS read a paper on "The Heart in Endocrine Disease."

Dealing first with disease of the thyroid, Dr. Evans said that the finding of abnormal circulatory signs could be a valuable aid to diagnosis. When paroxysmal fibrillation occurred with a swelling of the thyroid, thyroidectomy might often end the arrhythmia, but this did not always happen, presumably because the thyroid condition was not the cause; established fibrillation found in hyperthyroidism was as a rule a sign of heart failure. If fibrillation persisted for ten days after operation quinidine therapy should be started. Two-thirds of such cases might be expected to return to normal without this; half the remainder would respond to quinidine, and the rest would continue with fibrillation, but at a slower rate. The persistence of fibrillation was not unfavourable, and digitalis need not be given unless exercise produced uncomfortable palpitation. He did not believe that cardiac enlargement progressed when the cause had been removed by thyroidectomy. Thyroid toxaemia might cause distension of the left auricle indistinguishable from that found in mitral stenosis. The speaker went on to discuss the heart signs in myxoedema and cretinism.

Speaking of acromegaly, he said that it was his experience that the heart did not show any changes in this condition, but in gigantism there might be generalized enlargement of the heart. After showing some electrocardiograms to illustrate abnormalities found in pituitary deficiency, Dr. Evans spoke of the heart in Addison's disease. In this condition, he said, the patient coming for investigation and treatment required the services of the endocrinologist and the cardiologist. Many of the cases presented for diagnosis were doubtful examples of Addison's disease, and the help of the electrocardiogram was indispensable. Repeated electrocardiograms might prove a reliable guide in the control of therapy.

Addison's Disease

It was well known that the blood pressure was low in Addison's disease; hypotension was probably the most constant single physical sign. It was common to find the systolic pressure lower than 100 mm. Hg, but its reaction during successful salt therapy was not as well known. During treatment it might rise to normal, and sometimes hypertension developed. Cases in which a low blood pressure persisted were many, and their progress in other respects might be satisfactory; in circumstances such as these it was difficult to judge progress during salt treatment.

Although a normal electrocardiogram did not exclude the diagnosis, a warning should be issued against accepting without due care in this circumstance a diagnosis based on suspicious clinical signs. This problem needed more attention. In studying the abnormal electrocardiogram it would be well to consider the changes in two groups. That changes might develop owing to excessive salt therapy was suggested from an experience of eight cases. Salt treatment first corrected the changes due to Addison's disease and then exerted its own influence on the tracing. If this was confirmed in the future an instrument of great value would be placed in the hands of the therapist dealing with Addison's disease. Treatment would aim at correcting the inversion of the T wave, restoring a physiological electrocardiogram, and stopping short of inducing such inversion. After showing electrocardiograms in typical cases of Addison's disease, Dr. Evans said that although he left the story unfinished he hoped that what he had said had emphasized the fact that the investigation and treatment of any patient remained incomplete without electrocardiography.

The heart in Addison's disease was small owing to the reduced blood volume peculiar to that condition. Periodical radiological examination was a necessary accompaniment of

treatment. Some degree of enlargement of the cardiac silhouette was to be expected as an effect of treatment, but greater increase should be avoided, and the appearance of conspicuous hilar shadows signified early death unless salt was withdrawn immediately.

With regard to other endocrine disturbances, he could not speak authoritatively on the gonadotrophic hormones, but in two cases of stilboestrol treatment for cancer of the prostate he had seen hypotension develop, although no such change had taken place from the same treatment in six women with carcinoma of the breast. It was reported that heart pain could result from too much insulin in diabetes—the so-called "insulin angina." It was difficult to decide whether the relationship was causal or casual. In diabetic coma the electrocardiogram was often altered.

In conclusion Dr. Evans said that he had not pretended to give an authoritative treatise on the way in which the heart felt the impact of all endocrine diseases, but he thought they should examine the deficiencies in their knowledge of this section of medicine.

Dr. RAYMOND GREENE said that he agreed very largely with Dr. Evans when he said that two-thirds of the patients with thyrotoxic fibrillation recovered as a result of thyroidectomy, and about half the remainder recovered on quinidine. After he had seen his hundredth case of thyrotoxic fibrillation, he worked out the proportion of recoveries, and it coincided with Dr. Evans's suggestion. He had had one case of a patient with typical angina of effort who was found to have diabetes mellitus. She was admitted to hospital and stabilized and had never had angina of effort since. He was not convinced that thyrotoxicosis was a cause of hypertension. Hypertension occurred in patients with thyroid disease in about the same proportion as in the general population.

Dr. CRIGHTON BRAMWELL referred to the peculiar third sound heard at the right apex in thyrotoxicosis cases and which often gave rise to a suspicion of mitral stenosis. During the war when examining recruits this problem was frequently encountered. The question would arise whether a man had mitral stenosis, and very often there was evidence of slight thyrotoxicosis or else of an overacting heart. The sounds in the two cases were almost identical.

Dr. EVANS replied to the discussion.

EVALUATION OF RENAL CLEARANCES

In the Section of Experimental Medicine of the Royal Society of Medicine on Feb. 8 there was a discussion on the evaluation of renal clearances.

Professor R. A. MCCANCE, F.R.S., in introducing the subject with Dr. J. R. Robinson, gave a definition of clearances, and discussed their physiological significance. He reviewed the various substances which had been used to measure the glomerular filtration rate and renal plasma flow. Speaking of urea clearance, he said that this was a valuable measure of renal function, though its precise significance was in some doubt. In chronic interstitial nephritis the urea clearance followed the progress of the disease, but it was less easy to say what it measured. In health, and when the urine volumes were high, the urea clearance was usually about 70% of the glomerular filtration rate; but in disease, while it was still probably some measure of that rate, instances had been reported in which it equalled or even exceeded it as measured by the inulin clearance. Nevertheless, the fact that urea clearance was an excellent measure of the progress of the disease was not disputed. The significance of all these clearances was much more problematical in disease than in health; he could multiply instances in which the physiological clearance ratios were upset, and no one knew on which of the two to rely.

Further problems had arisen since the function of the kidney in very young children had been studied. To begin with it was convenient to be able to refer the infant data to some standard used for adults. In children, after the age of about eighteen months, clearances seemed to vary fairly closely with the surface area, so that once the surface correction had been made the baby could be thought of as an adult. But earlier than eighteen months, and especially in the very young infant, the clearances were very low, though there was no evidence whatever that such clearances were abnormal. Here again the exact significance of these clearances in the infant was not known. The inulin clearances seemed to measure the glomerular filtration rate, although this had not been tested out in infants as it had been in adults and in animals. Those who had measured diodone clearances at low levels of plasma concentration had found them low relative to the inulin clearances, and so high "filtration fractions" had been obtained. Could it be assumed in these circumstances that the diodone was measuring the effective blood flow through the kidney? Another interesting thing about the function of the tubules in young children was that the exogenous creatinine clearances were not consistently higher than the inulin clearances, as in the adult. They were in fact equal to the inulin clearances, so that there was evidence that creatinine was not excreted from the plasma to the urine by the tubules of the infant. Professor McCance concluded what he described as a provocative opening by repeating that little was really known about the significance of renal clearances in disease. Asked about the use of these substances clinically, he said that in his view inulin or diodone clearance was not of any particular value, but it would be interesting to hear what people with clinical experience had to say. He was content with urea clearance.

Effects of Anoxia

Professor KENNETH J. FRANKLIN showed a colour film made recently in the Department of Physiology at St. Bartholomew's Hospital illustrating the effect in the rabbit of anoxic diversion of the renal cortical blood flow. The existence of the "shunt" seemed to add, he said, to the difficulties being discussed. In the film, to permit closer study of the superficial visible changes, the left kidney was exteriorized. Free air entry into the trachea was restricted, and during the development of anoxia the kidney surface was seen to shrink in size, become wrinkled, and commence to pale. With free air entry the kidney surface rapidly flushed and then became red all over, but the wrinkling persisted for an appreciable time for some reason now being investigated.

Dr. J. A. BARCLAY brought forward certain observations which he said could be explained only on the basis of a three-component system of excretion—namely, filtration, secretion, and reabsorption. The discussion was continued by Dr. D. A. K. BLACK, Dr. W. T. COOKE, Professor ROBERT PLATT, and others.

Professor C. W. WILSON said that the urea clearance test was not readily applicable in hospitals as a routine, and yet it was true to say that it could yield much information. What he desired to see was a simple test applied in hospital, one which would not be subject to gross errors, and which might yield much earlier information concerning kidney reserve. He wondered whether endogenous creatinine clearances might be the answer as a measure of diminished glomerular filtration before the blood urea rose.

Professor MCCANCE said that Professor Wilson's was a very difficult question to answer. Nobody knew what they were measuring when they measured endogenous creatinine. The difficulty was the chromogens, which were present in the plasma in variable amounts and reacted with the reagents. Until an absolutely specific method of estimating creatinine was available, so that the amount of creatinine normally present in plasma could be simply and easily established, it seemed useless to talk in quantitative terms about endogenous creatinine clearances.

Professor H. P. HIMSWORTH, who presided in the absence of the president, Professor G. W. Pickering, asked whether there was any real evidence that urea clearance was a test of renal function. Dr. J. R. ROBINSON, in reply, argued that while the urea clearance test would show that the kidney was not functioning normally, and would give some idea of how badly it was functioning, it would not distinguish between renal insufficiency due to abnormalities in the kidney and renal insufficiency due to extra-renal causes.

INTERNATIONAL STATISTICS

In a discussion on international statistics at the January meeting of the Royal Statistical Society, Dr. PERCY STOCKS, chief medical statistician at the General Register Office, described recent efforts to secure co-operation in the international field so far as mortality and morbidity statistics were concerned.

He believed that a greater degree of international agreement had now been reached concerning statistics of disease and death than about statistics of any other kind. An international list of causes of death had been in existence for fifty years and had been revised at international conferences of statisticians and medical experts. Two urgent needs had presented themselves: the first to obtain a classification of diseases and injuries apart from mortality, and the second to obtain agreement on methods of dealing with death certificates on which more than one cause of death was stated: more than half the certificates now gave multiple causes. He and Dr. Dunn, chief vital statistics officer in the United States, met after the international conference in 1938 and resolved to pursue these matters. Then the war came and Great Britain, the United States, and Canada were caught unawares without the morbidity classification which was urgently needed.

A committee of the Medical Research Council in this country set to work and produced a classification of diseases and injuries which had been widely used. At the same time, about 1944, a somewhat similar classification was produced in the United States. Fortunately both these classifications were based on the framework of the international list of causes of death, and it seemed possible to arrive at an agreed classification which would serve the purpose both for mortality and morbidity. This would do away with the ridiculous position whereby a soldier admitted to a military hospital, then transferred to a civil hospital, and afterwards pensioned off, might have half a dozen code numbers for the same illness, and if in America or Canada different numbers. At the end of 1945 Dr. Stocks went to Washington, and the first difficulties of settling the general principles with a large commission of American experts were overcome. A small working party was set up which in two months hammered out an agreed basis with the help of numerous specialists. This was intensively studied by a medical advisory committee, revisions were considered, an interim committee was appointed by the World Health Organization, and the list was circulated to seventy countries for their criticisms and comments. Replies were received from about forty, and at a subsequent meeting in Geneva as many of the amendments as were appropriate were incorporated. Meanwhile the United States and Canada decided to adopt the English system if this was approved by the International Conference of Statisticians held in Paris last year. The conference did approve, and approval was also given by the World Health Assembly.

It was decided to print the new manual in English, French, and Spanish and to produce a set of international regulations which would be obligatory from 1950 onwards unless a nation decided to contract out. The regulations required the use of the English system of notification of causes of death. The manual with the new classification was now on the way to Geneva, and should be available in London in a few weeks' time. The consequence of all this would be, Dr. Stocks added, that if he happened to be riding a bicycle and was knocked down by a taxi and got a septic compound fracture of the tibia, whether it happened in Hampstead or in Amsterdam, Copenhagen or Baltimore, his number—an eight-digit number—would be the same.

MANCHESTER PAEDIATRIC CLUB

The Manchester Paediatric Club was inaugurated on March 15, 1948, with a membership of twenty-five. Dr. Catherine Chisholm, C.B.E., was elected president, and Professor Wilfrid Gaisford is the secretary. Three meetings are to be held annually.

At the first meeting on July 7, Professor EDMOND KERPEL-FRONIUS, of Hungary, read a paper on "Body Fluids in Dehydration and Malnutrition," and Dr. M. L. THOMSON followed with "Notes on the Use of Arabon in Gastro-enteritis." The second meeting was on Oct. 5, when Dr. DOROTHY ANDERSEN, of New York, read a paper on "The Treatment of Coeliac Disease."

The first annual general meeting was held on Jan. 7, 1949, with a scientific session consisting of six papers in the morning, and a discussion in the afternoon on "Methods of Improving the Child Health Services." The annual dinner followed. The next meeting will be on May 9, when the lecturer will be Professor Lichtenstein, of Stockholm.

ACCIDENTS IN THE HOME

At a meeting of the Society of Medical Officers of Health held on Feb. 17 at Tavistock House, Dr. C. A. BOUCHER, a medical officer of the Ministry of Health, read a paper entitled "Can the medical officer of health help to prevent home accidents?" Sir ALLEN DALEY was in the chair.

Dr. Boucher said that the 6,000 fatal accidents which occurred annually in homes in England and Wales accounted for almost one-third of the total number of accidental deaths in the country each year. Apart from the fatal accidents it was reasonable to suggest that there were possibly 60,000 non-fatal home accidents of moderate severity each year. There had been over the last ten years no fall in the number of fatal accidents. On the contrary, in the two age groups under 5 years and over 65 there had been some increase. More children under 5 years lost their lives as the result of an accident in the home than from accidents on the roads.

It was probable that accidents were fairly evenly distributed throughout the country. This was confirmed by an analysis of fatalities from burns and scalds in the 83 county boroughs in England and Wales during the last three years. Surveys of home accidents suggested that the majority were preventable. In support of this Dr. Boucher referred to an inquiry made in 1943 by Dr. Marion Wright in Glasgow, from which she concluded that squalid living conditions, with overcrowding and a low standard of intelligence and conduct associated with them, provided the background to the majority of these accidents. It was difficult to say what part was played by structural defects in the home; it was not believed that existing house design was a major cause, although it contributed to errors of judgment and carelessness. Dr. Boucher quoted an analysis of 504 burns and scalds which were admitted to the M.R.C. Burns Unit of the Birmingham Accident Hospital during the three years from 1945–7.

Three-quarters of the accidents in the home were provided by two types of injury. Falls accounted for 60% of the fatalities, and the large majority of these occurred among the elderly, while burns and scalds accounted for 15%, and these affected mostly children under 5. Too little account was taken of the many elderly persons with defective hearing and limited eyesight who were subject to attacks of giddiness. In the case of the elderly special attention should be given to safe stairs, adequate lighting, and sufficient handrails.

Unprotected Fires

The unprotected coal fire was still the greatest source of danger to the young and old, but the electric fire, especially of the portable variety, was becoming more and more a menace, and existing legislation did not provide for the adequate guarding of electric and gas fires. Dr. Boucher stated that tea in any of its stages of preparation or consumption was the commonest single cause of scalds, and accounted for one-quarter of the fatalities, which occurred mainly in infants and young children. He went on to draw attention to the considerable increase over the last ten years in deaths from suffocation, mainly of children under 1 year of age.

He outlined what was being done to reduce home accidents, but wondered whether this was sufficiently effective. He considered that there should be a more individual and personal approach, and doubted whether legislation, except with regard to the manufacture and sale of safe articles, could be effective. He suggested that the medical officer of health with his staff could contribute much of value, because of his intimate knowledge of conditions in his area and because he had access to the homes and could influence the people in the welfare clinics. In addition, he could arrange home safety exhibitions, and by means of lectures, pamphlets, and other propaganda could make his district "accident-conscious." The medical officer of health was concerned with the pre-school child, and in years to come

the problem of old people would become more urgent; in these two age groups the bulk of domestic accidents occurred. He suggested that the opportunity was there for the medical officer of health, and that it might be advisable to carry out a careful survey of accidents which had occurred in the district before undertaking propaganda and education to counteract them.

Dr. Boucher mentioned the valuable work that was being done in some areas by the local education authorities through school teachers. He concluded by suggesting that the health visitor and sanitary inspector in routine visits could, by their influence and advice, eliminate accident-promoting hazards which existed in many homes and of which the occupiers were unaware.

LEEDS REGIONAL PSYCHIATRIC ASSOCIATION

The inaugural meeting of the Leeds Regional Psychiatric Association was held on Jan. 29 at the General Infirmary. The objects of the association are to promote and improve the mental health of the individual and the community by the study of clinical, social, educational, and administrative problems of the psychiatric practice in the region. In the course of a general discussion on the aims of the association Professor D. R. MACCALMAN, who was elected chairman, expressed the hope that the meetings would be of social as well as professional value and that it would be possible for the assistant psychiatrists in the mental hospitals to make their contribution to the work of the association. Ordinary membership is open to specialists in psychiatry and trainees who are accepted by the association's executive committee. Associate membership is open to psychologists, psychiatric social workers, and lay therapists practising in the Leeds region. The honorary secretary of the association is Dr. J. W. Affleck.

CHELSEA CLINICAL SOCIETY

The fifth meeting of the session was held on Feb. 8 at the South Kensington Hotel with the president, Mr. NILS ECKHOFF, in the chair. A discussion on the insidious onset of serious disease was opened by Dr. DESMOND MACMANUS and continued by Dr. HORACE EVANS. Both speakers replied to the subsequent discussion by Drs. POCOCK, SUNDELL, CHADWICK, ATKINSON, ECKENSTEIN, STUART WEBB, SANDELL, HUGH GARDNER, NIALL MACMANUS, SIMPSON HARVEY, and Mr. STEELER.

Certain sections of the Criminal Justice Act, 1948, involve the National Health Service. Section 24 confers upon courts of summary jurisdiction power to make orders for the reception and detention of offenders in institutions for persons of unsound mind. Where such an order is made it has the same effect in law as if it were a summary reception order made by a justice under Section 16 of the Lunacy Act, 1890. In most cases in which the question of action under this section arises the court will have remanded the person concerned for a medical examination and report on his mental condition under the provisions of Section 26. Before an order is made under this section the clerk of the court will normally ascertain, through the regional hospital board, the name of a hospital in which the patient can be received. However, where "catchment" areas have been allotted to mental hospitals, or as and when they are allotted, regional hospital boards should inform courts of summary jurisdiction in their area of the arrangements made in order to enable them to make the necessary arrangements for the patient's reception direct with the appropriate hospital. Subsection (3) enables payment of the usual allowances under the Witnesses Allowances Order to medical practitioners for attending and giving evidence for the purposes of the section. Section 26 enables a court of summary jurisdiction, where it is satisfied that the person charged with an offence, punishable on summary conviction with imprisonment, has committed the offence, to remand the offender on bail for periods not exceeding three weeks at a time for the purpose of medical examination and report on his physical or mental condition by a duly qualified medical practitioner. The court is empowered to make it a condition of his bail that he shall undergo examination at a specified institution or place or by a specified medical practitioner. The institutions and out-patient clinics in the National Health Service will be available to courts free of charge for this purpose. Unless the court for any special reason thinks it necessary that the medical practitioner who makes the examination should attend and give oral evidence, the report of the examination will be made in writing.

Correspondence

Plasma-cell Mastitis

SIR,—Dr. Max Cutler (Jan. 15, p. 94) has done a useful service by his excellent review of plasma-cell mastitis in drawing attention to an uncommon lesion of the female breast which is of sufficient importance to merit more widespread recognition. Dr. Cutler established this condition in the literature as a distinct entity with a characteristic clinical picture following a study of 10 cases in the year 1931,[1] and subsequent studies have served mainly to confirm the accuracy of his original observations.

In 1941, along with Dr. M. B. Dockerty, I reported a series of 24 instances of plasma-cell mastitis from a group of considerably more than 12,000 benign, malignant, and inflammatory lesions which had been treated at the Mayo Clinic.[2] At that time I thought that the condition must be an extremely rare one, but since then, with access to a much more limited supply of clinical material, I have encountered three additional cases, and I now wonder whether a careful look-out for these cases by clinicians would not be rewarded by the discovery of a large number of unrecognized instances of the disease.

There are two points which should be emphasized in considering the aetiology of the condition. In the first place, it has been observed only in parous women. In some cases as long as 25 years have elapsed between the last period of lactation and the appearance of the lesion, but lactation has preceded every reported lesion. Secondly, when the patient has been available for questioning the usual finding has been that for some reason or another she had not been able to use that breast for nursing purposes. In seven out of the Mayo Clinic series of 24 cases the nipple was congenitally retracted. In another case in the same series, and in one studied later, the lesion had occurred in an accessory breast. I believe that the retention of milk in the breast for long periods forms the most satisfactory explanation of the cause of the lesion. It is easy to understand that the retained products of lactation, probably altered by the action of enzymes, might eventually find their way into the periductal tissues and there, by chemical irritation, set up the typical low-grade inflammatory response characterized by infiltration of plasma cells, epithelial autonomy, and the appearance of giant cells. It would also explain the phagocytosis of fat droplets which is such a marked feature of some of the sections and the discovery of fatty-acid crystals in others. However, the most convincing argument in favour of this hypothesis is the experimental production of a similar picture by Rodman and Ingleby,[3] who injected pancreatized milk into the breasts of virgin rabbits and pancreatic extracts into the breasts of lactating rabbits.

Although on section of the affected breast the lesion appears to consist of multiple discrete foci, tridimensional inspection, were that possible, would reveal a continuous extension of the cellular exudate along the outer surfaces of the milk ducts, embracing them in much the same way as ivy overgrows the trunk and branches of a tree. One effect of this process is the tendency to compression and obliteration of the duct system which prompted the earlier German authors to style the condition "mastitis obliterans." This is indeed the most characteristic feature of the lesion, and the term is, to my mind, preferable to "plasma-cell mastitis," because it is applicable to the many specimens in which plasma cells, although present, do not predominate. However, if the conception of the aetiology of the condition as stated above could be regarded as proved, "stale-milk mastitis" would be an even more appropriate title.

Dr. Cutler's description of the characteristic clinical sequence of a minor inflammatory episode characterized by pain in the non-lactating breast followed later by the discovery of a lump bearing all the hall-marks of malignant disease is admirable, and there is no question that a typical history may give a clue to the diagnosis. But unfortunately this history is not always obtainable. Five of the 24 patients studied by Dr. Dockerty and myself gave no history of pain in the breast prior to the

finding of the lump. In these cases the condition could not have been suspected by clinical examination alone.

It has been suggested that "plasma-cell mastitis" can be diagnosed clinically. I think that the time has come when any surgeon who indulges in this type of guess-work should be brought to task for his errors. Biopsy is a simple and safe procedure and should be carried out in all cases of breast tumour. Any risk, discomfort, or inconvenience which may be occasioned to the patient by this trivial procedure cannot be weighed against the surgical crime, in the treatment of a lesion that may be malignant, of temporizing until the opportunity for its successful ablation has been irretrievably lost. In my experience the pathologist has had no difficulty in recognizing the inflammatory nature of the condition by the technique of quick-frozen section. The actual diagnosis has sometimes been in doubt, due to lack of acquaintance with the disease, but it has always been possible to rule out malignancy by this means. Some of the cases have been labelled "atypical tuberculosis," but the differentiation between the two conditions is not difficult when it is remembered that plasma-cell mastitis involves the ducts and periductal tissues, while tuberculosis usually has a perivascular and perilymphatic distribution. Furthermore, in tuberculosis typical tubercles are nearly always found, and they often contain caseous centres. In plasma-cell mastitis the tubercles are artifactual and caseation is not discernible.

The experiences of Rodman and Lübschitz[4] serve as a warning that major surgery should be delayed until after the subsidence of the inflammatory stage. Dr. Cutler's observations on the radiosensitivity of the lesion during this period are interesting, but in view of the morbidity of irradiation and the tendency shown by the lesions to subside spontaneously the time-honoured ritual of painting the part daily with iodine is probably all that is needed in the acute stage after the diagnosis has been established by biopsy. Local removal of the residual lump or simple mastectomy should be carried out when the lesion is no longer painful or tender. There is no indication for radical surgery. In the case reported by Gronwald[5] part of the plasma-cell exudate was left behind and no harm resulted.

I am not aware of any evidence to suggest a relationship between plasma-cell mastitis and carcinoma. Even if a case were to be reported in which the two conditions coexisted, the possibility of pure coincidence would have to be taken into consideration. Dr. Cutler's case of bilateral plasma-cell mastitis is the only one that has come to my notice. Two of the patients in the Mayo Clinic series gave a history of disease in the other breast, a cyst in one case and an abscess in the other. In the remainder the contralateral breast was free from disease. Dr. Cutler is to be congratulated on his discovery of this unique case.—I am, etc.,

Ottawa, Ontario. COLIN D. L. CROMAR.

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Self-administered Trilene Analgesia

SIR,—May I from 8,000 miles away make some comment on the letters of Mr. F. Neon Reynolds (Sept. 25, 1948, p. 620, and Oct. 23, p. 761), and Professor R. R. Macintosh and Dr. C. Langton Hewer (Oct. 9, p. 691)? It seems to me that the latter two correspondents are constrained to base their criticism of the present "trilene" inhalers on the fact that they are not ideally "foolproof" as seen through the eyes of an advisory council for midwives. Nothing in this world is "foolproof": least of all the motor-car, or even the bicycle, provided for the midwife. I suggest that the very stairs up which she climbs to attend her cases have been responsible for more foetal and maternal morbidity than trilene (or any other) analgesia ever will be.

A year ago I presented[1] a preliminary paper on trilene analgesia as yielded from a small pocket inhaler, now known as the "trilene inhaler" (10 oz. or 284 ml.), covering over 2,000 cases, of which about one-third were obstetrical, including mid and high forceps, eclampsia, craniotomy, perineal repairs, etc. Results from this group bore a striking similarity to those obtained in over 50 other painful conditions—85% good, 9% fair, and 6% failures.

Since this time I have collated approximately 5,000 cases of the use of my inhaler, and there are probably 10 times this number unobtainable up and down this country, in England, and in other parts of the world. As is the way of our profession, I have no doubt whatsoever that I should have heard sharply and crisply had any untoward sequels arisen through its use. I have had no such report.

An even more important point is that in a very considerable proportion of the cases (all of which were of course self-administered) the patients were Africans, often of necessity left unattended for long periods of time with what has become known as the "white-man's pain pipe." Now, in matters of medicine the Bantu has a staggering disrespect for quantities, and it has been observed that the trilene ampoule of 6 ml. lasts usually a much lesser time than when used by the European, owing to the former's inhalational enthusiasm. Yet no report of effect on the child has been received, and, except for one observer who thought "the duration of the labour was slightly increased," none on the mother.

Drs. Helliwell and Hutton[2] state that trilene passes the placental barrier. So does chloroform, ether, cyclopropane, etc. These and nitrous oxide have a relatively ineffective phase of analgesia: trilene has a very marked one. The point of interest is, however, whether the quantity of trilene required to provide maternal analgesia will be such as to jeopardize the infant. As far as my results from this inhaler show, there is no practical effect.

Thousands of women are being permitted daily to suffer pain in childbirth when we have at our finger-tips the means greatly to relieve them. To my mind it is fantastic that what is considered satisfactory and safe is being withheld from many thousands of ordinary people because the intermediary—the midwife—is considered insufficiently intelligent to lift the curtain of pain for one in the drama she unfolds for two.—I am, etc.,

Durban, South Africa. J. T. HAYWARD-BUTT.

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Haemolytic Disease of the Newborn

SIR,—Sir Leonard Parsons (Feb. 5, p. 234) has commented on our paper published in your columns of Jan. 22 (p. 123). It seems that the main point of controversy is whether the occurrence of kernicterus is or is not closely related to the severity of the haemolytic process.

In a letter to the *Lancet* on April 19, 1947, Sir Leonard Parsons wrote, " . . . there is no evidence that the products of haemolysis ever produce such damage [i.e., to the liver and brain]. Indeed the evidence is all to the contrary; for instance, changes in the liver and brain have never been described in congenital anaemia of the newborn in which the degree of haemolysis is greater than in icterus gravis." We summarized this letter by saying that Sir Leonard Parsons believed that there was an inverse relationship between the degree of blood destruction and the development of kernicterus, but readily accept his contention that we should have said that he had never found "any parallelism" between the two phenomena.

The causation of kernicterus remains obscure, but our observations strongly suggest that the condition is more likely to develop if the infant is anaemic at birth than if it is not. We have tried to show that this relationship is obscured by the changes in haemoglobin concentration that occur after birth; and we are not aware of any observations on cord blood which refute the evidence that we have obtained.—We are, etc.,

P. L. MOLLISON.
London, W.12. MARIE CUTBUSH.

Diagnosis of Tuberculous Meningitis

SIR,—I have been reading with interest the recent correspondence on the diagnosis of tuberculous meningitis and should like to suggest that present investigators might do well to include an estimation of the blood/C.S.F. sugar ratio in their biochemical tests. In my series of cases examined ten years ago I found this estimation to be of greater diagnostic significance in the early stages of the disease than that of the C.S.F. sugar alone. It should not be forgotten that the convulsions

which so often mark the beginning of active trouble raise first the blood sugar and subsequently the C.S.F. sugar level,[1] and should the latter alone be estimated an apparently normal reading may be obtained. But this correlated with a blood-sugar reading taken at the same time will give a ratio below the lower limits of normality should tuberculous meningitis be present.

The level of C.S.F. chlorides is dependent on that of blood chlorides and is not, to my mind, of much diagnostic significance. If vomiting is a marked symptom, then they will both be lowered in the early stages, but I had several cases in which they approximated to normal even in the terminal stages of the disease. My results were published in detail in 1939.[2]

In view of the number of letters which appear in these columns drawing the attention of more recent workers to already published results which they have apparently overlooked, might I put in a plea that more use should be made of the *Quarterly Cumulative Index Medicus*?—I am, etc.,

Kempston, Bedford. ESTHER H. WELBOURN.

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Tuberculosis in the Family

SIR,—It may be interesting to recall some figures of my own[1] which confirm the statement of Dr. C. O. Stallybrass in his excellent article "Tuberculosis at the Crossroads" (Feb. 5, p. 207). He says that "family contacts of known cases form at least one-third of the cases of tuberculosis." Some years ago with the help of all the London tuberculosis officers I was able to collect information on 6,933 new cases of tuberculosis with regard to their previous association with other cases of the disease within the intimate family circle.

In 2,167 instances, or approximately 31% of all cases, there was a history of household contact of some sort thought worthy of note, and in 350 of these there was more than one such contact. Investigation, however, concentrated on "important" contact—i.e., where a previously affected member of the immediate family was alive and suffering from tuberculosis, or where death had occurred from pulmonary tuberculosis in the immediate family within the preceding five years. A detailed analysis showed that 3,021 T.B.-plus male and 2,158 T.B.-plus female patients coming for residential treatment for the first time had been investigated and that the frequency with which contact with a previous case was noted was seen to diminish with increasing age. For instance, while 15% of all males with positive sputum showed previously important contact with the disease in the intimate family circle, the percentages ranged from 21 and 23 in the 16–20- and 21–25-year groups respectively, down to 10 in those over 40 years of age. As age advances a similar diminution in the importance of contact with a previous case was also seen in females.

Females throughout, however, showed a larger incidence of contact with a previously known case. Thus at all ages 22% had been in contact with a previous case in the intimate family circle, whilst the percentages ranged from 31 in the 0–15-year group down to 17 in those over 40 years of age. This greater incidence of contact as a factor in the causation of the disease in females as compared with males was thought to be due to the wider opportunities of exposure to infection in the family by reason of domestic and nursing duties. Kissing also might be a factor.

As regards the relationship of what might be called the "infecting" case, it was noted that the original cases were in parents in 20% in males compared with 27% in females. A tuberculous parent seemed to be a greater danger to a daughter than to a son. Here again the reason was possibly the special position of women in the household in regard to nursing and domestic duties and the like. Approximately three-quarters of all "infecting" cases were either living cases of pulmonary tuberculosis with positive sputum or cases which had succumbed to pulmonary tuberculosis within the immediately preceding five years.

I emphasized as a result of this work that contact with a previously diagnosed case of tuberculosis in the family was of sufficiently common occurrence in the history of new patients to stimulate examination of contacts in the attempt to find early cases, and I would agree now with Dr. Stallybrass that data of this description should also stimulate us to press on with trials of vaccination by means of B.C.G. in these and other vulnerable classes of the community.—I am, etc.,

Brentwood, Essex. F. J. BENTLEY.

REFERENCE

1 *Annual Report of the L.C.C.*, 1937, **3** (Part I), 45.

Tuberculosis at the Crossroads

SIR,—In his interesting study of "Tuberculosis at the Crossroads" Dr. C. O. Stallybrass (Feb. 5, p. 207) throws some incidental light on a possible signpost which may be of value. Those of us who for long have been gravely suspicious that among nurses there was a relatively higher incidence of tuberculosis will have noted his words that, while the mortality rate in this group was not higher than among other young women of similar age, there "would seem to be a higher rate of morbidity." The distinction is significant and understandable, as nurses should be favourably placed as to early discovery and treatment, though at a higher exposure risk.

Surely, however, "higher morbidity," if recognized, should hasten the day for B.C.G. protection, in which this country has lagged so far behind Scandinavia. While statistics are lacking, there is little indication that our beds, closed for lack of staff, are being filled. Parents hesitate about health hazards for their daughters, and our profession is uneasy. If we recognize a signpost at the crossroads perhaps we may the sooner reach Norway's happy position of having "waiting beds" instead of the "waiting lists" of which Dr. Stallybrass speaks.—I am, etc.,

Northwood, Mddx. ESTHER CARLING.

Whither Tuberculosis?

SIR,—Now that Drs. G. Lissant Cox (Dec. 25, 1948, p. 1118) and A. S. Hall (Jan. 8, p. 70) have had their say and the *British Medical Journal* has made a pronouncement (Feb. 5, p. 226) on the above subject, may the voice of one who has worked in the tuberculosis service as long as the gentlemen mentioned, but who does not see eye to eye with them in this matter, be heard? Or are we to be told that *B.M.J. locutus est, causa finita est*?

To put the matter in its proper perspective a little personal history is necessary. I was appointed district tuberculosis officer by the Derbyshire County Council in December, 1918, on a salary of £500, *plus* the right to private consulting practice in tuberculosis and diseases of the chest. As I had come into the tuberculosis service from the Indian Medical Service the system of a fixed salary for public work combined with consulting fees for private work was no novelty to me. I soon found that in my district a chest disease of great clinical interest had long been known among the gritstone masons, ganister miners, and cutlery grinders, and naturally this condition and its supposed relation to pulmonary tuberculosis attracted my attention. When in due coure the first silicosis compensation scheme was put into operation, the work of examining the employees in the scheduled industries devolved upon me. For this work I was, of course, independently paid.

Near Buxton is situated the research station of the Safety in Mines Research Board, and there I made the acquaintance of Professor J. S. Haldane and many other scientists interested in questions regarding the production of dusts in industry and their effects on health. I began to see in front of me possibilities of an interesting career and life study in diseases of the chest, and I built myself a house in Buxton with a consulting-room and a waiting-room for my private patients.

Alas, "the best-laid schemes . . ." The Home Office decided to "keep its ain fish guts for its ain fish maws," and appointed special district boards under its medical department for the routine examination of the workmen in the scheduled industries. Officially silicosis was taken out of my hands, but unofficially I continued to see suspected and established cases of silicosis and to make my investigations. Now, after thirty years, I can claim to have made some contribution to knowledge regarding that and kindred diseases.

In the nineteen twenties certain Divisions of the B.M.A. began to object to private consulting practice being undertaken by salaried clinical officers. The question became acute about 1924. Our division of the B.M.A. held a meeting in Derby and decided to support the right of clinical officers to private consulting practice. A resolution to that effect was sent to the Representative Body, and I was elected as divisional representative and directed to move the resolution at the Representative Meeting at Bath. There, alas, I made the greatest mistake of my life, a mistake which ever since I have bitterly regretted and of which I am thoroughly ashamed. The

Council of the B.M.A., alarmed at our resolution, had decided to modify, if not withdraw, its opposition to the right of clinical officers to private consulting practice and throw the onus of decision upon the local authorities. The Council of the Society of Medical Officers of Health agreed to this course. On the night before the meeting at Bath the chairman of the latter Council saw me, and tried to convince me that this move on the part of the B.M.A. gave us all we wanted and that in the circumstances it would be an error in tactics to move the Derby resolution. I could find only one colleague to consult, and unfortunately he agreed with the Society of Medical Officers of Health. Bewildered, against my better judgment, I gave way to the pressure, and at the meeting publicly withdrew the Derby resolution. I had fallen into the trap prepared by both Societies. Within a year my right to private consulting practice was taken away. As a solatium my salary was put up to £750, rising by increments to £935. But my freedom as a consultant was gone.

Time brings its revenges if only one lives long enough. With the Health Act of 1946 the wheel has come full circle. The old subordinate "tuberculosis officer" has gone, and the chest physician (not "tuberculosis physician," *pace* the *B.M.J.*) has come into his own. His consultant status is established. He will have beds at his disposal in the hospitals in his district. His usefulness in the preventive and rehabilitation spheres will be increased by his new status and the new facilities at his disposal.

Being on the wrong side of 70 years, I can only survey the promised land from its frontier and wish my younger colleagues and successors good fortune in their new freedom. If, with the privilege of the aged, I may be allowed one or two suggestions for their consideration, I would venture to say: Avoid thinking in woolly abstractions such as "the community," and regard your patients and their families as human individuals, every one of them unique, none of whom loses any rights as a human being by suffering from tuberculosis. Remember that an Englishman's house is his castle, which belongs to him and not to "the community," and which you enter at his invitation as a friend and counsellor and not of any right as a State policeman. Remember that there are greater evils than tuberculosis stalking through the land to-day, and that one of them is the submergence of the individual in the savagery of the mob, the triumph of the cheap slogan and facile shibboleth over reason and experience—in the words of Charles Morgan, "The totalitarian attempt to disintegrate the human personality by offering to weary and impressionable men the opportunity to collaborate in a false, artificial and tyrannical unity."—I am, etc.,

Chichester. PATRICK HEFFERNAN.

Rights of Inventors

SIR,—May I raise a question of general interest, that of the rights of a surgical inventor in his inventions? According to present conventions anyone may ignore an invention, may recommend it, may decry it, or may modify it. I think this is all to the good, although I would suggest that modifications should not be made without (if possible) notifying the originator of the device. This may save him the not uncommon annoyance of having an early variation which he has abandoned for good cause brought forward by someone else as an improvement. I submit, however, that there is one treatment of an invention against which one is entitled to rebel: it is that of inaccurate description. The cause of this present protest is as follows.

Some twenty years ago I published a theory of the treatment of talipes consisting of three carefully worked-out steps, no one of which was effective without the others. They consisted of a manipulation far more drastic than any previously described, the continuous wearing of a splint affixed with sticking plaster until a full range of movement was gained, and the final use of a night splint to maintain this range. I had the greatest difficulty in getting the Arris and Gale Lecture containing this theory printed, owing to the disapproval of the orthopaedic authorities to whom the editors of journals submitted it. However, it was much taken up in the U.S.A., and in the normal course of events has now reached this country. Some of the descriptions of it now appearing in textbooks are sound. There is, for instance, an admirably clear and succinct summary in *Pye's Surgical Handicraft* (Wright, 1947), to which I would refer those who are considering writing it up but cannot spare the time to see it actually applied. Others, however, are exasperating travesties. In *Recent Advances in Orthopaedics* (Churchill, 1937), for instance, there is a figure showing the foot being bandaged in to the splint while the footpiece is still on the cross-bar—which shows that the writer has not a clue to the mechanics of the device. And in *British Surgical Practice* (vol. 4, Butterworth, 1948) the same splint is shown with the leg piece cut off, while the letterpress asserts (as I can well believe) that this splint will not hold an infant's foot. As I teach that an uncomplicated talipes can be fully reduced by six months of age—after that only needing the night splint—I am not pleased by this.

Surely easily avoidable inaccuracies of this sort are unfair in three ways. First to me, in making me appear to recommend devices that certainly will not work. Secondly to the purchaser of the book, who depends on it for guidance. And thirdly, and most important, to the patient, who, as I have only too good cause to know, loses the chance of early and complete cure while being treated according to hopelessly misconceived ideas of what I really do.—I am, etc.,

London, W.1. DENIS BROWNE.

Infective Ear Disease

SIR,—Mr. C. M. Johnston (Feb. 5, p. 237) places us further in his debt by stating the incidence of central perforation, attic perforation, and granulations in his cases of otitis media, and giving the result of treatment in each group of cases. One must agree with him that there is practical difficulty in advising operation in cases of "quiescence" or, as I would prefer to call it, persistent grumbling infection; and one must agree that occasionally with mere passage of time in the most unpromising case all active infection ceases. But exceptions make bad law.

Mr. S. R. Mawson (p. 238) agrees with me (Jan. 15, p. 111) in preferring dry toilet and powder insufflation to irrigation, and his figures show how quickly effective such treatment can be. He advocates light insufflations with iodine-boric powder at daily intervals, fearing harm from heavy insufflations with penicillin-sulphathiazole-urea at longer intervals. His method has the advantage of proven value over many years, but I think his fears of the alternative suggested, with its less demands upon the patient's time, are exaggerated. Filling the meatus with powder does not in practice dam up discharge. Occasionally, all discharge apparently ceasing, the powder remains as a concretion hiding the middle ear; this should be removed by forceps, crushing or curette, never by syringing. If removal is not effected the patient should be told to attend again in a month, when no difficulty will present itself—in such a case there is no urgency.

Skin reactions are most uncommon (and incidentally were not quite unknown when boric powder was used), but an occasional heavy insufflation appears less liable to cause reaction than frequent light applications. The treatment is, of course, not to be repeated indefinitely; an early result is to be expected, or the case is unsuitable for the method.

It is suggested that silver nitrate prevents a detailed inspection of the middle ear. In chronic suppurative otitis media such inspection is not necessary every day, and in less than a week any obscuring effect has quite disappeared. To me the preparation is invaluable in treatment.

Mr. Mawson speaks of the essential prelude to powder insufflation, "meticulous dry mopping after suction of the middle ear with a Siegle's speculum." The need for this cannot be overemphasized.—I am, etc.,

Canterbury. T. A. CLARKE.

A Clinic under the N.H.S.

SIR,—As one who has worked at the Institute for the Scientific Treatment of Delinquency for two years, I must say that Dr. Melitta Schmideberg (Feb. 5, p. 243) has been a little unfair both to the clinic clerical staff and to the National Health Service in her letter.

The staff's enthusiasm for paper work was well established long before the National Health Service took over; it is occasionally irksome, but it is the only clinic I have worked in that has never lost one of my patient's documents and never

made a mistake over an appointment. This service is so good that I now gladly comply with their administrative requests.

Delinquents are naturally the worst of all hospital appointment-keepers, but I find it no more tedious to wait for them when I expect to be paid (some bureaucrat at the North-West Regional Board having so far held up my proper contract) than when I was not paid. There is always something to read or write to fill in the odd half-hour.—I am, etc.,

London, N.W.1. J. F. COOPER.

SIR,—In your issue of Feb. 5 a letter signed by Melitta Schmideberg appears (p. 243) under the above heading. This letter refers to the Portman Clinic (I.S.T.D.), which is the new name under the National Health Service of the clinic formerly administered by the Institute for the Scientific Treatment of Delinquency.

The letter was discussed at the next routine professional staff meeting of this clinic on Feb. 7, which was very fully attended. At this meeting it was unanimously decided that we should write to you and state that the professional staff of the clinic wished to dissociate themselves entirely from both the spirit and the content of the letter. In particular they deprecate strongly the criticism of the clerical staff, whom they expressly stated they had found to be courteous, helpful, efficient, and obliging, and singularly free from the faults attributed to them in that letter.—We are, etc.,

DENIS CARROLL,
J. D. W. PEARCE,
Medical Co-Directors.

Portman Clinic (I.S.T.D.),
London, W.1.

Heat and Blood Flow

SIR,—The annotation on heat and blood flow (Feb. 5, p. 230) is certain to disconcert many who use thermal agents to therapeutic ends. The news that more recent investigations carried out by Siems, Kosman, and Osborne support the well-established assumption that a temperature rise increases blood flow may therefore come as a relief to those who felt that the observations of Kemp and his co-workers were at variance with everyday experience.

A well-conceived "Comparative Study of Short Wave and Microwave Diathermy on Blood Flow" has led Siems and his co-workers[1] to conclusions which they summarize as follows:

(1) Short wave and microwave diathermy are equally effective in increasing local blood flow in the hind extremity of the normal dog.
(2) Loss of motor or sensory innervation to the part does not affect the essential nature of the vascular response to heating.
(3) Evidence is presented suggesting that the integrity of the sympathetic outflow in the dog is necessary for the typical vascular response to local heating.
(4) There is no evidence that any known method of heating possesses properties which have specific effect on blood flow.

—I am, etc.,

London, S.E.1. P. BAUWENS.

REFERENCE
1 *Arch. phys. Med.*, 1948, **29**, 759.

Oral Reactions to Penicillin

SIR,—As a mycologist I was interested in the review and investigations by Dr. W. G. Cross (Jan. 29, p. 171) under the title "Oral Reactions to Penicillin." The striking similarity between it and the mycotic infection lingua nigra pilosa suggests the same aetiology. In support of this the following points, common to both conditions, are presented: (1) The oral erythema as seen about the third day. It constitutes the initial reaction to the irritation by the invading organism. (2) The discoloration of the tongue. This is due to the presence of the infecting fungus, the colour varying according to species. (3) The common site of the lesion; the hypertrophy of the fungiform papillae as well as the denuded patches on the tongue. The latter lesions are later reactions to the infection.

The micro-organisms found in the course of the investigation are normal inhabitants of the mouth, and the cells diagnosed as *Monilia albicans* represent a variety of yeasts which are not determinable except after detailed culture study. At the same time the failure to demonstrate mycelium in the scrapings is hardly an indication of their absence, as prolonged and patient search by a mycologist is necessary before a case is pronounced negative. Even then culture will often reveal their presence.

In conclusion, the oral reaction to penicillin may be explained on the basis of symbiosis. Penicillin, being a metabolic by-product of a fungus, will furnish in the mouth an ideally favourable environment for other species of saprophytic fungi—which occur in abundance and are both ingested and inhaled at some time or other—to thrive as facultative parasites. In the circumstances, apart from withdrawal of the penicillin lozenges, gum, or spray, which in any case are replaceable by other bactericides, fungicidal treatment should be instituted in the form of mouth-washes of Lugol's iodine and alkalis.—I am, etc.,

Wembley Park, Middlesex. N. GOHAR.

Cancrum Oris

SIR,—May I add to Dr. Donald Mackay's observation (Feb. 5, p. 223) on cancrum oris? I have seen this condition not infrequently in the Tropics and sub-tropics, and can certainly confirm that penicillin is effective in arresting the local progress of the disease almost immediately. This, however, is only part of the treatment, as cancrum oris is a manifestation of debilitating disease, which in tropical conditions may be due to any combination of tropical anaemia, sprue, chronic malaria, kala azar, and worm infestation. A precipitating factor appears to be an infectious fever.

My first experience of this condition was in an Indian auxiliary in Assam. The patient had a spreading gangrene of the upper lip. Penicillin was given, and the spread was arrested immediately, a sharp line of demarcation forming. Then the gangrenous tissue sloughed without haemorrhage, but the patient died later of kala azar. I saw further cases of the disease in Mosul, Iraq, where, judging by the frequency of the admissions to hospital, the condition must be not uncommon. I have no records of the numbers of patients treated, but they were considerable, and the value of penicillin had been well recognized.

The gangrenous areas became remarkably sharply demarcated after no more than 24 hours' penicillin treatment, and after separation a characteristic punched-out area was left. The gangrene was frequently extensive and deep, affecting bony structures—most frequently the adjacent alveolar margin—and often the whole of the superior maxilla bone would become bare, the teeth fall out, and finally a sequestrum separated. Fatality was rare, but the residual deformities in severe cases were hideous and the despair of the plastic surgeon.

One fatal case of which I have a record is that of a young woman who was admitted with a gangrene affecting the whole of the left face from forehead to mandible and excavating posteriorly to include the palate, leaving the globe unaffected, rendering the appearance revolting beyond description. Even in this case penicillin stopped the spread of the gangrene, but the patient died, perhaps not unmercifully, of inanition.

I can confirm an occasional spontaneous cure of cancrum oris, having operated on a patient in Mosul—a young Kurdish woman—for a typical punched-out defect of the upper lip with loss of adjacent alveolar margin; the lesion was acquired in childhood following a febrile illness, when a piece of tissue fell away.

Regarding Dr. Mackay's suggestion that the disease is infectious, I found no evidence of this in Mosul, where healthy children were admitted to hospital with the mother and affected child. I would suggest that in the case recorded there was a common predisposing factor—malnutrition, infestation, or malaria—and both children acquired some infectious disease precipitating the onset.

Perhaps in conclusion it may be of interest to record that in the one case of genital phagedaena under my care in Iraq penicillin was as effective as in cases of cancrum oris.—I am, etc.,

Swansea. B. BRENDAN HICKEY.

Amethocaine Hydrochloride

SIR,—It is fair that I should confirm Dr. P. E. Thompson Hancock's letter (Feb. 5, p. 236) on the subject of amethocaine anaesthetic fatalities, as one of the cases reported by him was one of mine. This case had been gastroscoped previously with no ill effects, but on the second occasion received a considerable overdose. At that time (1937) the drug was not scheduled as dangerous, and in trying to improve on the technique which

Dr. Hancock had taught me I was experimenting with a Schindler's anaesthetic tube. There was in this case no idiosyncrasy, as symptoms developed on the second occasion only.

Shortly afterwards it was my misfortune, though not through any responsibility of mine, to see a patient die in cocaine convulsions, again from overdose. The symptoms were identical—respiratory spasm, apnoea, cyanosis, and generalized convulsions following rapidly on each other. It seemed that there was not likely to be more than a few seconds for successful treatment of the established condition, and I should doubt if it would be feasible. Prevention is certainly the defence to rely on, and by the use of pastilles, supplemented by gargling, anaesthesia should be obtained with at the most 0.05 g. It is probably safer, if the throat remains irritable, to supplement local anaesthesia by general sedation, and on the advice of Dr. Avery Jones I have found intravenous injection—e.g., morphine—very helpful, and have had no anxiety from it.—I am, etc.,

Hove, Sussex. W. A. BOURNE.

SIR,—We read with interest the article on amethocaine sensitivity by Mr. C. A. Jackson (Jan. 15, p. 99), for on the day of publication we experienced a similar near-catastrophe in which the picture was almost identical with that described.

Our case was a woman aged 71 admitted for gastric investigation. A gastroscopy was planned, and the fauces were painted with a total of 5 ml. 2% amethocaine solution. It is our practice to carry out this procedure with the patient seated facing the spot lamp and immediately to transfer the patient to the table, but in this case before the transfer could be effected she became distressed, made grunting noises, and became unconscious within 30 seconds of the completion of painting. She was lifted on to the adjacent table. Twitching of the facial muscles which rapidly progressed to general clonic spasm occurred, and pulse and respiration failed equally rapidly.

Resuscitation was commenced immediately, a steep Trendelenburg position being adopted, and inflation with oxygen by compression of the bag of a Boyle's apparatus was begun by one of us, while the other administered intravenous "pentothal" (1.5 ml. of 5% solution) and the surgeon scrubbed up for cardiac massage should it become necessary. The clonus ceased within one minute of the administration of pentothal, and intubation was now performed to facilitate inflation. The pulse became imperceptible at the wrist, and 10 mg. "methedrine" was injected intravenously. The pulse became perceptible, but with this improvement the clonus returned. Pentothal (1 ml.) controlled this, but the pulse failed again. A further 5 mg. of intravenous methedrine was given, and the pulse improved. The surgeon was now ready for cardiac massage and the abdomen prepared, but the pulse continued to improve and the respiratory movements began.

Within ten minutes in all of the onset of symptoms breathing needed no further aiding. A B.L.B. oral-nasal mask was applied, and the table gradually levelled. The patient was reacting to supra-orbital pressure within 30 minutes of the onset, and was returned to the ward after a further half-hour. She was drowsy all that day, but was her normal self the following morning. We had hoped to observe the effect of intradermal injection of 1 minim (0.06 ml.) of the amethocaine solution, but she refused all tests.

We feel that this case serves further to emphasize the possible danger of amethocaine sensitivity so admirably described in Mr. Jackson's paper, the existence of which as an entity has not in the past been universally appreciated.—We are, etc.,

G. J. REES.
Liverpool. J. H. WAKELY.

SIR,—It is not surprising to me that Dr. M. McMinn (Feb. 5, p. 236) reports that a patient became unconscious after the injection of 4 ml. of a 2% solution of amethocaine hydrochloride. I have knowledge of a case where death occurred in a young adult after the injection of about 6 ml. of a 2% solution. This is a satisfactory concentration for surface anaesthesia, but is in my view forty times too strong for local infiltration anaesthesia.

My own experiences with amethocaine hydrochloride have been happy. I have used it over 5,000 times for gastroscopy (as a 25 mg. tablet or up to 5 ml. of a 2% solution) and well over 800 times as a field block for abdominal operations (350–400 ml. of a 0.05% solution with adrenaline), and in no cases were any toxic effects exhibited.—I am, etc.,

London, S.W.16. NORMAN C. TANNER.

Specialization

SIR,—Specialization in medicine is a direct result of the inability of any one mind to assimilate the discoveries of many minds. It has phases of enthusiasm and growth, alternating with phases of disquietude and retrenchment. Specialization in every branch of medicine—e.g., neurology, psychiatry, paediatrics, and cardiology—has been resisted, and from time to time there are attempts to put the clock back in spite of the intellectual and practical fruits of such specialization. More recent specialties, such as endocrinology, in which I am particularly interested, have still to make appreciable headway against an understandable resistance.

Apart from innate conservatism, the causes of such resistance may be grouped under certain headings: (A) Too many specialists results in too few general physicians. (B) One cannot be a good specialist unless one has a sound general knowledge of medicine. (C) General medicine is too greatly impoverished and too severely drained by the specialists. All these are valid. The solutions to A and B are obvious; that to C less so, and C is therefore the greatest obstacle. In my opinion it can be solved in two ways. The general physician must be acknowledged to have an indisputable right to retain a sufficient number of "specialist" cases under his care throughout, so that his practice and teaching will be representative of all aspects of medicine: the specialist will still have, in most big centres, a sufficient number of cases for the advancement of his own specialty. A specialist should always be available to give an opinion on a case under the care of a general physician colleague if so requested, but should never "claim" such a case for his own department, directly or by implication, or by common practice. This solution involves the spirit of humility and team practice, which, if accepted, will open up still further, as it has already done in some centres, the road to progress in the erudite and complex field of modern medicine.—I am, etc.,

London, W.1. S. LEONARD SIMPSON.

Millilitres Correct

SIR,—Mr. N. A. Herdman (Feb. 5, p. 243) deplores the alteration of the abbreviation mil to ml. in the *British Pharmacopoeia, 1948*, and he gives reasons for his preference for mil. He could have added to these the fact that the Weights and Measures Regulations, 1907, give mil as the abbreviation of millilitre, and he thus has statutory authority on his side. Yet in spite of this I think that on balance ml. is to be preferred to mil, and perhaps the considerations below may incline Mr. Herdman to shift his sympathies in favour of ml.

There is a curious inconsistency in the Weights and Measures Regulations; the abbreviations for decilitre and centilitre are given as dl. and cl. respectively, and in conformity with this ml. might well have been expected for millilitre instead of mil. To be consistent the regulations should be amended so as to substitute ml. for mil. Mr. Herdman supports the use of mil on the ground that it cannot be confused with any other measure. Actually, however, the term mil is also used as a linear measure representing one-thousandth of an inch. But perhaps the most important of all considerations from the practical standpoint is that scientific workers invariably use the abbreviation ml. and not mil, and the *British Pharmacopoeia* in adopting ml. has done nothing more than bring itself into line with modern scientific usage.—I am, etc.,

London, W.14. J. M. HAMILL.

Marxist Genetics

SIR,—"To surround anything, however monstrous or ridiculous, with an air of mystery, is to invest it with a secret charm and power of attraction which to the crowd is irresistible. False priests, false prophets, false doctors, false patriots, false prodigies of every kind, veiling their proceedings in mystery, have always addressed themselves at an immense advantage to the popular credulity, and have been, perhaps, more indebted to that resource in gaining and keeping for a time the upper hand of Truth and Common Sense, than to any half-dozen items in the whole catalogue of imposture. Curiosity is, and has been from the creation of the world, a master-passion. To awaken it, to gratify it by slight degrees, and yet leave some-

thing always in suspense, is to establish the surest hold that can be had, in wrong, on the unthinking portion of mankind."

So wrote Charles Dickens more than a hundred years ago. This use of the mysterious is characteristic of all appeals to emotion and is incompatible with reason. Communists have managed to attach an undefined kudos to such vague terms as "solidarity," "proletariat," "dialectical materialism."

The Lysenko imbroglio is part of the same woolly propaganda. In order to assess truth in a situation of any complexity it is necessary to separate individual issues from one another and to investigate each critically by the scientific method. Dr. John R. Baker writes in his admirable little book *Science and the Planned State* (George Allen and Unwin, 1945):

"There has been much propaganda for Lysenko's methods of controlling the time of germination of seeds, and people might be led to think that 'vernalization' was a Soviet discovery. An American scientist tells us, however, that the discovery was made in the United States before the Civil War (Sax, K., 1944, 'Soviet Biology,' *Science*, **99**, 298). The principle was certainly firmly established by Braem in 1890, in connexion with the germination of the resting reproductive bodies of animals (Braem, F., 'Untersuchungen über die Bryozoen des süssen Wassers,' *Bibl. zool.*, 1890, **2**, (6), 1)."

The proper critics of Lysenko's work as such are the established biologists. Doctors are little qualified to pronounce on the scientific question, and politicians not at all. But people with little real knowledge of biology and much enthusiasm for Marxism will feel that by making much of Lysenko their political dogmas receive a scientific cachet. Whether he has or has not in fact confirmed the earlier work referred to by Dr. Baker is simply a matter of scientific proof or disproof. The Communists, however, wish to make it a matter of political propaganda, and trumpet the presumed demonstration that environment can occasionally influence the germination of a few members of the vegetable kingdom as proof that the political environment alters human evolution.

This is a complete *non sequitur*. In simple fact the chief difference between Soviet biological science and Western science is that the latter is prepared to acknowledge or to reject the truth of facts according to the accepted rules of trial and error, experiment and control, irrespective of politics; whereas Soviet science will reject any fact, truth, or proved discovery, such as the Mendelian hypothesis or the work of Morgan, merely because it is inconvenient to the Marxist ideology. To requote Lysenko: "In order to get a particular result, one must want to get exactly that result." The converse is clearly, "If you do not like a result, that result is not true." This may be good politics, but it is not science.—I am, etc.,

London, W.1. GEOFFREY BOURNE.

POINTS FROM LETTERS

Animal Experiments

Dr. G. N. W. THOMAS (Penarth, Glam.) writes: Dr. Michael C. Platten (Dec. 25, 1948, p. 1122) raises issues over which, I am sure, many of our profession are deeply concerned from both the scientific and moral aspects. Dr. Platten's view is that "experiments involving animals in considerable pain, mutilation, in which life is long preserved, or prolonged misery (such as food or water starvation) are unjustifiable and of doubtful value in the progress of clinical medicine," and he refers to experiments in the U.S.A. whereby dogs had the lower end of the aorta excised: nine out of ten dogs died after one to seven days, with cold, cyanosed, and paralysed limbs. A dog in this country, as reported in one of our physiology books, was kept alive in a laboratory for a year and a half after repeated slicings away of its cerebral hemispheres. Its utter misery from the outset can be imagined. As to dogs, Sir F. Treves (*Journal*, 1898, **2**, 1385) said, "From operations on dogs I have everything to unlearn," and Lawson Tait wrote, as to an epitaph on a tombstone, "I want only one thing recorded on it, and that to the effect that 'he laboured to divert his profession from the blundering which has resulted from the performance of experiments on the sub-human groups of animal life in the hope that they would shed light on the aberrant physiology of the human groups'" (*Med. Pr.*, 1899, **118**, 498). Surely wilful cruelty in any shape or form is reprehensible. Should it not be prohibited in the pursuit of remedial measures in medicine and surgery?

Whither Tuberculosis?

Dr. G. B. LORD (Rushden, Northants) writes: "Striving to better, oft we mar what's well."—*King Lear*, I, iv.

Obituary

F. J. H. COUTTS, C.B., M.D.

Dr. F. J. H. Coutts, who died at Bournemouth at the age of 83 on Feb. 13, was for many years a medical inspector of the old Local Government Board and senior medical officer of the Ministry of Health.

Francis James Henderson Coutts was born in Queensland, Australia, in 1865. He was the son of Robert Coutts, of Windermere, and received his medical education at Owens College, graduating M.B., Ch.B., with honours in pharmacology and therapeutics, in 1892, and proceeding M.D. in 1898, when he was awarded a gold medal for his thesis. He was a research fellow in pharmacology at Owens College, and from 1899 to 1901 he was assistant to Professor Sheridan Delépine in the public health department of the university. Encouraged by Delépine, himself a pioneer in public health bacteriology, Coutts decided to make public health his life work. He took the D.P.H. in 1900 and the B.Sc. in public health in 1907. In 1901 he was appointed medical officer of health of Blackpool, where he soon became known as a capable and efficient administrator.

Sir Arthur Newsholme had become medical officer of the Local Government Board in 1908, and one of his first recommendations was that Dr. Coutts should be a member of his staff. Coutts was duly appointed a medical inspector of the Board. His early work there was in the Foods Branch with Buchanan and MacFadden. He was a Fellow of the Chemical Society, and his wide knowledge of chemistry was utilized in investigations of the value of condensed and dried milks and proprietary foods in infant-feeding. In 1912, as the result of the Astor Report, a national tuberculosis service was set up under the Local Government Board, and Newsholme entrusted Coutts with the direction and planning of its medical administration. Coutts, as he often said, never pretended to expert knowledge of tuberculosis, but his public health experience and his reliance upon the clinical members of his staff enabled him to integrate the public health aspect with the curative side of tuberculosis work and to provide an excellent organization for the needs of the major local authorities which were responsible for tuberculosis schemes.

Coutts was an indefatigable writer of minutes, and during the early years of the national scheme worked long hours in Whitehall, often being the last official to leave the building. Newsholme found him an ideal coadjutor, and in 1915 entrusted him also with the medical planning and organization of the new venereal diseases scheme. The characteristic conscientiousness and ability that Coutts applied to this work was recognized outside official circles by his election as president of the Society for the Study of Venereal Diseases. All these important duties left Coutts little time for other work, but in 1915 a special report of his to the Board on anthrax due to infected shaving brushes imported from Japan led to the control and abolition of this method of infection.

The Ministry of Health was founded in 1919, and Coutts became senior medical officer in charge of tuberculosis and venereal diseases work. Throughout his official life he was a kind and considerate chief, and his integrity and justice inspired loyalty and confidence among his staff. In 1923 he was created a Companion of the Bath for his services. He examined in public health for Liverpool, Manchester, Birmingham, and Leeds Universities. He was a freemason, attaining to high rank in the craft. He also found time in his busy life for gardening and for golf. He was an enthusiastic motorist and a member of the Savage Club. In 1930 he retired and went to live at Bournemouth, where he was always glad to welcome his old friends and colleagues. He was a keen member of the British Medical Association and was one of the chief organizers of the successful annual meeting held at Bournemouth in 1934.

In 1937 some concern was expressed about the prevalence of tuberculosis in Wales, and in September of that year Sir Kingsley Wood, the Minister of Health, appointed a committee consisting of Mr. Clement Davies, K.C., M.P., and Dr. Coutts to inquire into the anti-tuberculosis service in Wales and Monmouthshire. Their report, published in 1939, spoke highly of the official work of the Welsh National Memorial Associa-

tion. The chief criticisms were directed to the preventive side of the work. The two-man committee did good service in stimulating co-ordination of the work of local authorities in Wales with that of the Association.

Towards the end of 1948 Dr. Coutts's health began to fail, and he died after a long illness. Dr. Coutts married Elizabeth Efford, daughter of Mr. C. G. Boullen, of Ambleside, in 1899. He is survived by his widow and two daughters.

C. H. ROGERSON, M.D., F.R.C.P.

Dr. Cuthbert Harry Rogerson, who died in Baltimore on Feb. 10 at the age of 37, was the medical director of the Seton Institute there. As a student at Guy's Hospital he was outstanding, and he won the Treasurer's gold medal for clinical medicine. He graduated M.B., B.S. in 1932, proceeded M.D. in 1933, and took the M.R.C.P. in 1934 and the D.P.M. two years later. Dr. Rogerson had been a house-physician and subsequently registrar in the department of psychological medicine at Guy's Hospital. At the end of this period he was awarded a Rockefeller fellowship and was able to spend a year with Dr. Adolf Meyer at the Johns Hopkins Hospital in Baltimore. He returned to Guy's as Sir Alfred Fripp fellow, and he was later psychotherapist at the Hill End Hospital, St. Albans. During this period he interested himself particularly in the psychiatric problems of young children. In 1937 he was appointed medical director of the Cassell Hospital at Penshurst. There he proved himself a capable administrator, and he wrote at this time a number of papers on play therapy in childhood, psychological factors in asthma, prurigo, and on the differentiation of neurosis and psychosis. In 1945 he was elected F.R.C.P.

Dr. Rogerson had already achieved much in his special field, and the opportunity for further achievement came in March, 1946, when he settled in Baltimore as director of the Seton Psychiatric Institute. He looked forward to the task of reorganizing the Institute, and he soon built up a staff of keen young men. He began teaching postgraduate students, and he renewed his old association with the Johns Hopkins Hospital. It seemed that he was safely embarked on a career that promised great distinction, and then about a year ago he fell ill.

B. A. writes: The news of Dr. Rogerson's death has not come as a shock to his many friends in this country, as for many months they had known the inevitable end. I leave it to others to give an account of his high professional qualities and achievements: his death is a great loss to British and American psychiatry. I want only to talk about the colleague and friend with whom I was closely connected for five years—war years, with strain, stress, and gross overwork, a time apt to bring out the best or the worst in people. In Dr. Rogerson it brought out the best. He was a man filled with human kindness, full of genuine and sincere interest in people, always ready to help by word and deed, a man with a deep understanding of human weaknesses who never had a bad word to say of anybody. He combined great modesty with quiet self-assurance, an inexhaustible thirst for knowledge, and an infinite capacity for work that made him the successful research worker he was. He had a great sense of humour which never deserted him, made difficulties less difficult, and added to the charm of his company. He had the rare gift of bringing out the best in all with whom he worked. Not only his colleagues but the entire staff felt the human interest he brought to bear in all their joys and sorrows. His harmonious personality pervaded the whole hospital and made it a happy place. He was an excellent conversationalist. His interests were not confined to medicine; he was at home in art and literature, especially in poetry. There was hardly a topic, however remote from the commonplace, to which he could not contribute in his own inimitable way. He was very popular and will be missed by many, but for his friends the world has become a poorer place without him.

Dr. FREDERICK RITCHIE SINTON died on Dec. 8, 1948, following a motor crash in which his brother also lost his life. He was born in 1882, and graduated M.B., Ch.B. at Edinburgh in 1904. After a short assistantship at Goole he came to Leeds in 1908 and started practice in Woodhouse, where he lived and worked until his untimely death. He served in the R.A.M.C. from 1915 to 1917, for much of this time in Salonika. He was a Conservative member of the Leeds City Council from 1920 to 1924; a member of the Leeds Panel Committee for many years, carrying out the arduous duties of chairman from 1939 to 1946; and he was also a member of the Leeds War Emergency Committee. He was keenly interested in medical politics and opposed the precipitancy with which the present National Health Service was introduced. Dr. Sinton was an enthusiastic supporter of all outdoor sports, and particularly of the Headingley Rugby Football Club, of which at one time his elder son was captain. In his early days he was keen on boxing. He was a sound and progressive general practitioner, held in high esteem by his colleagues. He had a genial presence, with twinkling eyes and a ready, infectious laugh, and with his generous and sympathetic nature he endeared himself to his patients, fellow practitioners, and friends. Although in his later years Dr. Sinton suffered many serious illnesses which might well have daunted a lesser man, he always faced the future with high courage. He never lost his zest for life but carried on smiling and cheerful to the end. His wife, whom he married in 1906, died a year ago, and he is survived by two sons, the elder carrying on the practice and the younger being the Leeds City police surgeon.

Dr. JOHN GRIMSON MOSELEY, one of the best-known practitioners in Jamaica, died on Jan. 11 at the age of 62. Dr. Moseley, who was a student at the London Hospital, took the conjoint diploma in 1911. He then went back to Jamaica and was in practice with his father, the late Dr. C. A. Moseley, of Port Antonio, until 1914. During the 1914–18 war he served in the R.A.M.C. with the rank of major, and after demobilization he graduated M.B., B.S., and proceeded M.D. in 1920. He rejoined his father for a short time, and subsequently settled in Kingston, where he did a great deal of work for the Nuttall Memorial Hospital and St. Joseph's Sanatorium. In the recent war he acted as surgeon-specialist to the Up-Park Camp until 1943, when he was appointed medical superintendent of the United Fruit Company.

H. A. L. writes: I knew Moseley intimately while we served together in the same units in the first world war. Straight as a gun-barrel, Moseley had a mind of his own, but was delightfully easy to get on with, a charming and intelligent companion with a common-sense outlook on life, and he appeared to me to have a deep knowledge of medicine. After the war he returned to Jamaica so that I saw nothing of him until I had the pleasure of a visit at the end of last year. He was tired, and said that he was glad that the time of his retirement from practice was at hand.

Dr. ALEXANDER MCCONNELL ERSKINE died in a nursing-home at Harrogate on Jan. 21 at the age of 80. He had been medical officer of health for Goole for forty-four years, retiring only two years ago. Dr. Erskine was born in Ulster, and graduated at Belfast University in 1889, proceeding M.D. in 1904. Two years previously he had been appointed medical officer of health for Goole at a time when the death rate was high and the infantile mortality rate was 188 per 1,000 births. Dr. Erskine saw the first child-welfare centre opened in the town in 1915, and this was followed by a maternity home in 1926, and in 1938 by the new health centre. He stressed the need for a cheap or free supply of milk to babies and infants more than forty years ago. He was also an early advocate of immunization against diphtheria, and was proud of the fact that since 1943 there had been no deaths from diphtheria in Goole. Dr. Erskine married Miss Dora Stanners Blair, daughter of Dr. Robert Blair, who survives him, and to whom the sympathy of all his friends and colleagues will be extended.

E. C. writes: Dr. Erskine had a real love and understanding of children and remained young in spirit up to the last. He was keenly interested in music, of which he had knowledge to enable him to appreciate it at its true worth, and he was widely read. In 1935 he was one of those who did the B.M.A. world tour and enjoyed it to the full, attending the annual meeting at Melbourne and making friends both on the voyage and in Australia. On the morning of Jan. 5, accompanied by his wife, he visited the isolation hospital, of which he was medical superintendent, and paid several other visits, driving his car with his usual ease and enjoyment. During the afternoon he suffered a coronary thrombosis, and until the day of his death on Jan. 21 he bore much suffering with fortitude and even with unfailing humour. His dignified and upright figure and his genial and lovable personality will be greatly missed by patients, colleagues, and a wide circle of friends.

In our obituary notice of Dr. F. H. A. Marshall (Feb. 12, p. 287) there was a reference to the third edition of his book *The Physiology of Reproduction*, which was first published in 1910. The publishers inform us that the third edition has not yet appeared, but publication is expected next year.

Medico-Legal

BREACH OF TERMS OF SERVICE

The Executive Council for the City of Sheffield unanimously approved on Feb. 1 a report from the Medical Service Committee recommending that the sum of 150 guineas should be withheld from the remuneration of a medical practitioner.

This case arose out of the attendance at the surgery of a practitioner on the Council's medical list, on Nov. 9, 1948, of an insured woman who claimed treatment as a National Health Service patient. The practitioner was unable to trace her name in his records, and he charged the patient a fee for which he issued a receipt. On Nov. 10 the patient attended at the offices of the Executive Council to apply for a refund of the amount paid by her to the doctor, when she produced three medical certificates: a "first" certificate dated Nov. 9, an "intermediate" certificate dated Nov. 16, both signed by the practitioner, and a "final" certificate which was undated and unsigned. The issue of these three certificates appeared to disclose an irregularity, and they were accordingly retained at the offices of the Council. On the same date, Nov. 10, the patient signed a statement to the effect that all three certificates had been given to her by the practitioner at the same time, with instructions that they should be sent in the correct order to the Ministry of National Insurance.

The clerk of the Council communicated the details of the case to the district officer of the Ministry of National Insurance in order that the patient's claim to benefit under the National Insurance Act might not be prejudiced; and on Nov. 11 he forwarded the three medical certificates, together with a copy of the patient's signed statement, to the Ministry of Health, in accordance with the provisions of Regulation 13(i) of the National Health Service (Service Committees and Tribunal) Regulations, 1948, for such action as the Minister deemed necessary.

In a letter dated Nov. 22 the Ministry of Health stated the view of the Minister that the matter was one which ought to be investigated by the Medical Service Committee, since there appeared to be a prima facie case that the doctor had failed to comply with his terms of service. Clause 7(7) of Part I of the First Schedule to the National Health Service (General Medical and Pharmaceutical Services) Regulations, 1948, made it obligatory for a practitioner, in issuing medical certificates, to comply with any regulations made under the National Insurance Acts, 1946; and the National Insurance (Medical Certification) Regulations, 1948, were thus incorporated in the doctor's terms of service. Clause 2(b) of Part I of the Schedule to these regulations stated that every certificate should contain the date of the examination on which the certificate was based, and also Clause 4 stated that every certificate must have been given on a date not more than one day later than the date of the examination on which it was based, and no further certificate based on the same examination should be furnished other than a certificate to replace an original certificate which had been lost or mislaid.

On Dec. 7 the matter was considered by the Executive Council, who decided, in accordance with Regulation 4(5) of the National Health Service (Service Committees and Tribunal) Regulations, 1948, to refer the case for investigation by the Medical Service Committee. On Dec. 8 the clerk informed the practitioner of the Council's decision, and in a reply dated Dec. 9 the practitioner stated he was still attending the patient. The certificate dated Nov. 16 had been issued in the knowledge that he would attend her on that date, and on that date he had visited her.

Subsequently the patient submitted to the Ministry of National Insurance three further intermediate certificates dated respectively Nov. 23, Nov. 30, and Dec. 7, 1948, and in a statement to an officer of that Ministry on Dec. 14 she stated she had attended the practitioner's surgery on Nov. 9, when the practitioner had issued three medical certificates which she had taken to the offices of the Executive Council. The practitioner had visited her on Nov. 23 and on each subsequent Tuesday. She had not sent for him, but he had visited her as arranged on the occasion of her surgery attendance.

Medical Service Committee Hearing

The practitioner was present at the hearing by the Medical Service Committee, as also were a member of the staff of the Executive Council and an officer of the Ministry of National Insurance. The patient did not attend. The practitioner stated that the patient had attended his surgery on Nov. 9, when he issued a first certificate; and as the patient appeared to be in ignorance of the correct procedure he explained that she needed a certificate each week. He gave her an intermediate certificate dated Nov. 16, and a final certificate which he had neither signed nor dated. The doctor stated he had not intended to sign the certificate dated Nov. 16, but had done so inadvertently as he was trying to explain to his patient that she must have a certificate each week. He added it was not uncommon to give certificates in serious illnesses, several at a time, and to sign them later, when they became due. Such certificates could be signed on the occasion of a visit to the patient's home. The practitioner understood this was a technical breach of the Regulations, but he added that if a practitioner could not trust a patient to the extent of giving him a certificate form when he was seriously ill, and filling it up on the occasion of a subsequent visit, he thought the doctor had a very poor working arrangement with his patient. He frequently gave patients blank certificates, which were to be presented to him for signing at later dates. The practitioner agreed that all the statements contained in the patient's statement of Nov. 10 were correct.

In reply to a question the practitioner stated he saw the patient for the second time when he visited her, at her own home, on Nov. 16. He was then asked if he could explain the patient's statement that he had visited her on Nov. 23—no mention having been made of any visit on Nov. 16—but to this the doctor made no reply. When asked if he had any evidence of his visit to the patient on Nov. 16, he said he had a visiting card for her.

A member of the staff of the Executive Council stated that the patient had presented the three certificates in question to him, as an officer of the Council, and had asked for the address of the Ministry of National Insurance to which they should be sent. He had then stamped the certificates with his personal stamp, showing that they had been received in the Council's office on Nov. 10, 1948, and the patient had then voluntarily made the statement bearing that date. An officer of the Ministry of National Insurance stated that he had visited the patient, who, in a freely given statement, said the doctor had visited her on Nov. 23. She had made no reference to Nov. 16, and the officer, who had not asked for any specific dates, formed the opinion that the doctor had not seen the patient between Nov. 9 and Nov. 23, 1948. The member of the Council's staff, here recalled, stated he had visited the patient, in the company of a colleague, on Dec. 16; and in the course of questions on specific points he had asked her whether, definitely, the doctor had visited her on Nov. 16, to which she had replied in the negative.

The practitioner then stated that when he visited the woman on Nov. 16 she was in bed. He had to visit her home, but he did not get to see her because there was no one there. He understood the patient was in bed, as nobody answered the door, and he was told she was in bed. The date of his next visit was Nov. 23, when he was able to see her. The doctor again admitted that on Nov. 9 he had issued a certificate dated Nov. 16.

Findings

The Committee found that the practitioner's action in issuing a post-dated intermediate certificate on Form Med. 2A, and an unsigned, undated final certificate on Form Med. 2B, as admitted by him, constituted a breach of Clause 2(b) and Clause 4 of Part I of the Schedule to the National Insurance (Medical Certification) Regulations, 1948, which are incorporated in the doctor's terms of service. "The Committee feel strongly that this action of the practitioner's, which was quite indefensible, was an extremely serious matter which indicated that no reliance could be placed upon his certificates. If the procedure used by this practitioner in the issue of medical certificates were adopted by other doctors it would soon become impossible to administer the National Insurance Act. The Committee feel that the integrity of the medical profession should be protected against such actions."

In considering the recommendations to be made to the Executive Council the Committee took into account the practitioner's attitude in this case, and also the fact that he had only recently appeared before them in connexion with another serious matter, when a warning had been issued to him that he exercise more care in his observance of the terms of service. The Committee accordingly recommended: (i) that a warning be issued to the practitioner that, in the event of his again being summoned to appear before the Committee in connexion with a serious breach of his terms of service, the Council would consider whether to exercise their right, under Regulation 6(d) of Part II of the National Health Service (Service Committees and Tribunal) Regulations, 1948, to make representations to the Tribunal that the continued inclusion of the practitioner on the medical list would be prejudicial to the efficiency of the service; and (ii) that the Council make representations to the Minister that, owing to the failure of the practitioner to comply with the terms of service, the sum of one hundred and fifty guineas be withheld from his remuneration.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

In a Congregation held on Feb. 5 the following medical degrees were conferred:

M.D.—J. A. Glover.
M.B., B.Chir.—*R. B. McGrigor, *J. W. MacLeod, *F. D. Schofield, *P. J. Andrew, *J. G. Gill, *J. Halford, *J. C. Burne, *Margaret L. Cox.

* By proxy.

UNIVERSITY OF LONDON

The governing body of the British Postgraduate Medical Federation has approved the award of Postgraduate Travelling Fellowships for 1949–50, tenable for one year, to Mr. J. V. Crawford, of the London Hospital (Neurosurgery, U.S.A.); Dr. J. S. Prichard, of the National Hospital, Queen Square, and the Postgraduate Medical School, Hammersmith (Neurology, U.S.A. and Canada); Dr. R. D. Tonkin, of Westminster Hospital (General Medicine, U.S.A. and Canada); and Dr. J. E. M. Whitehead, of St. Thomas's Hospital (Bacteriology, Scandinavia).

UNIVERSITY OF LEEDS

At a meeting of the Council of the University held on Feb. 16 Wallace Ironside, M.B., Ch.B., D.P.M., was appointed Senior Lecturer in Psychiatry.

Dr. John Jamieson and Miss Jamieson donated £100 for the endowment of a Prize in Practical Anatomy in memory of their father, the late Professor J. Kay Jamieson.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on Feb. 10, with Lord Webb-Johnson, President, in the chair, the appointment of Mr. V. Zachary Cope as Bradshaw Lecturer was announced.

Mr. Julian Taylor (University College Hospital) was re-elected and Mr. T. A. Hindmarsh (Newcastle), Mr. R. J. McNeill Love (Royal Northern), and Mr. Digby Chamberlain (Leeds) were elected Members of the Court of Examiners.

Mr. J. S. Arkle (Newcastle) and Mr. F. C. Hunt (Nottingham) were elected to the Fellowship of the College *ad eundem*.

Sir Heneage Ogilvie and Mr. L. C. E. Norbury were reappointed as the representatives of the College on the Council of the Imperial Cancer Research Fund, and Mr. J. M. Wyatt was re-elected as representative on the Central Midwives Board.

The Hallett Prize was awarded to I. S. R. Sinclair, of the University of Edinburgh.

The Diploma of M.R.C.S. was granted to C. P. Cotterill and to the 134 successful candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of Feb. 5 (p. 249) as recipients of the diploma of L.R.C.P.

Diplomas in Public Health (twenty-two), Laryngology and Otology (five), Psychological Medicine (one), and Anaesthetics (two) were granted jointly with the Royal College of Physicians of London to the successful candidates whose names were published in the report of the meeting of the Royal College of Physicians of London in the issue of Feb. 5 (p. 249).

The following hospitals were recognized under paragraph 23 of the F.R.C.S. regulations: Mount Vernon Hospital and Radium Institute, Northwood (surgical registrar, first, second, and third, and house-surgeons); Hillingdon Hospital, Uxbridge (surgical registrar and senior house-surgeon).

Medical Notes in Parliament

COST OF HEALTH SERVICE

Supplementary Estimate Approved

On Feb. 17 the House of Commons went into Committee on Supply to consider the supplementary estimate of £52,800,000 for the National Health Service in England and Wales.

Mr. BLENKINSOP, Parliamentary Secretary to the Ministry of Health, said that the supplementary estimates were of a very large size and therefore warranted close inspection by the committee. The estimates were introduced some seven months before the introduction of the scheme. It was quite impossible to tell the extent to which the new scheme would be used by the general public. It was impossible to tell just how far the professional services would be available. A factor of great importance which again could not be evaluated at that time was what would be the remuneration of those taking part. At the head of the estimates would be seen provisions for hospital services. That covered the figures of advances both to regional hospital boards and to boards of governors of teaching hospitals. The additional sum was £22,346,000. The Service covered over 36,000 hospitals and clinics together with some 36 teaching hospitals. There had been £3,500,000 additional capital expenditure.

The major cause of the increased running expenses was increased pay of staff. The pay of student nurses had been almost doubled at a cost of some £3,000,000 a year, including improvements in other nurses' pay that amounted to an extra charge of £1,500,000. The increased pay of domestic workers in hospitals amounted to £2,000,000 a year, of which £750,000 was involved in the period of the estimate. Other staff increases amounted to about £1,500,000 a year, and special provisions had been made for increases to doctors and specialists in hospitals as a result of the Spens Report, for which provision had been made by some £6,000,000. This might not be the end of the wage increases which might be needed in the profession. Negotiations were proceeding at the moment.

Although provision was made for an extra £16,000,000 for liabilities transferred to the Minister, a large part of that would be recouped from the Hospital Endowments Fund. There was no intention to raid the fund. There would be a set-off one against the other, but they had no intention of depriving the fund at all. An extra sum of £370,000 was for increased payment to the Ministry of Pensions. It covered the provision of artificial arms and legs, and artificial aids of most kinds, including surgical boots, motor- and hand-propelled chairs, and artificial eyes.

There had been another large increase in the amount required for grants made to local authorities. Many of those services did not in the past attract any Government grant at all. To-day all of them attracted a 50% Government grant. Such services included care of mothers and young children, home helps, home nursing, and ambulance services. There was provision for an extra £716,000 for the expenses of administration. It had been found necessary to increase staffs to enable the work to be efficiently carried out. Some part of that expenditure was non-recurrent. Provision was also included for an extra £500,000 which had been added to the Mileage Fund for doctors in rural areas.

An addition of nearly £5,000,000 was required for the pharmaceutical service. The estimates were based on the old N.H.I. scheme, under which some 50,000,000 prescriptions had been issued in an average nine-monthly period. Provision had been made for an increase of a little over double that number of prescriptions. In fact something like 128,000,000 prescriptions would be needed in that period of nine months. The cost of the actual individual prescriptions had been greatly increased over the estimate. There had been payments to chemists in advance of the normal dates which merely represented transfer from one period to another. There was no evidence of any general misuse of prescribing by the medical profession. There might undoubtedly be individual cases, but full provision existed for keeping watch on that matter.

The estimates for the dental service—just under £12,000,000 increase—had been originally prepared before the Spens Report had been received. The increase for the ophthalmic services amounted to about £11,000,000. Under the N.H.I. scheme only 5% of those entitled to benefit had made use of the provision. The demand had been increased to some four times the previous estimate. Up to Jan. 31 nearly two million pairs of spectacles had been provided. They were not saying that either on the dental or on the ophthalmic side they were satisfied with the rates of payment to those who were participating, and discussions were proceeding on that matter which would no doubt assist in future periods.

They were a bulwark against the fears of insecurity in the past and to that extent were an encouragement to the economic effort and the difficult period which lay ahead.

Wrung from the Taxpayer

Mr. ASSHETON said that anyone who understood our financial position and had paid heed to the remarks of the Chancellor of the Exchequer in recent months must have been deeply shocked and alarmed by the introduction of a batch of supplementary estimates which represented in total practically all the money that was being wrung from the taxpayer by way of purchase tax.

Members of the Opposition who were in the Coalition Government and had had a hand in framing the post-war social services were feeling very great anxieties lest all the hard work should be brought to naught by the shocking administration of the Minister. In the declaration of policy which the Conservative Party had put to the electorate the intention had been laid down clearly to provide a comprehensive health service, and that had always been their policy. They should not overlook the fact that it was from the pockets of the working men and women that the greatest contribution came.

He wished to criticize first the childish underestimation in respect of which there had been no satisfactory explanation by the Parliamentary Secretary. He wanted to comment on the obvious growth of bureaucracy which these estimates showed. The National Health Service Bill was introduced on March 19, 1946. The final figure of the financial memorandum was: "The net annual expenditure falling upon the Exchequer is £95,000,000." The estimate introduced by the Minister last spring was £132,000,000. He had now come along with an additional supplementary estimate for £52,000,000. Those figures for the estimate and for the supplementary estimate covered only nine months.

The matter of the ophthalmic service was very puzzling. The original estimate was about £2,000,000; the revised estimate was for £12,500,000—an error of estimation of 600 or 700%. Plenty of other people had known that the service would cost more than £2,000,000. The cost of a pair of spectacles was from £2 18s. to £3 14s. Before the scheme came in there were about four million pairs made in England every year. Somebody might have guessed that the cost might be four million times £3. That would have given an estimate of £12,000,000.

Sir ROBERT YOUNG asked whether he was taking account of the number of spectacles exported in that four million.

Mr. ASSHETON did not believe that many had been exported, and the Minister had said that more than two million pairs had been supplied by his Department.

On the general practitioner estimates, it was clear that the amount spent on one or two services alone this year exceeded the total amount spent on family doctoring. Critics had suggested that that disclosed a lack of proportion. He suggested that doctors up and down the country were in many cases overworked and had not sufficient time to give attention to their more urgent cases. In some country districts doctors were badly hit financially, while they saw around them enormous and wasteful extravagance which wise administration might avoid.

The teaching hospitals were to have had £10,000,000 and now wanted £18,000,000, and regional hospitals, which were to have had £91,000,000, were now up to £103,000,000. How could such estimating be excused? He had been told that the administration of hospitals had in many cases been removed from the hospital itself, that a great bureaucracy was growing up. There was great over-centralization of administration. The public had been deceived into thinking that there were far more services available than in fact there were. The Minister had shown himself quite irresponsible in financial matters and heedless of the best interests of the patients as well as of the medical profession. Mr. Assheton suggested that he was unfit to hold office and should go.

Extent of Need Shown

Mr. MESSER said that the supplementary estimate indicated the extent of the need for the Service. Did the Opposition suggest that, because the number of people who would benefit by an expensive drug like streptomycin was unknown, tuberculous people should die because the estimate was wrong? If that was the position the debate would be the finest ammunition for the general election there had ever been. The supplementary estimates could be justified on the grounds that human life was more important than cash.

Sir HUGH LUCAS-TOOTH suggested that the Minister was not only guilty of bad estimating but guilty of reckless understatement. The policy of the Minister had been to keep the estimates as low as possible so that the scheme would be on its feet and the House would be presented with a *fait accompli* in the supplementary estimates.

Miss BACON said that there were various groups in the country at present who were asking for more money. They might have a good case, but it was noticeable that in recent months the Tories had been encouraging those pressure groups to ask for more services of one kind or another. How did the Opposition reconcile that attitude with their present one?

Colonel STODDART-SCOTT asked the Minister to say what steps he was taking to prevent abuse of the dental scheme. Why was £11,000,000 extra wanted for the ophthalmic service? The Minister had built up an over-centralized administration. He had collected many new people who had had no experience of administering hospitals. He had shown a great unwillingness to accept advice, or take advice, or even seek advice.

Mr. W. GRIFFITHS said he did not think there was any substantial frivolous demand for the ophthalmic service.

Mr. H. LINSTEAD said there was unnecessary competition between hospital groups in the matter of hospital salaries and wages of staff. He hoped that the Minister would leave the professions, regional boards, and management committees the greatest amount of liberty to put their enthusiasm into doing their job with the very minimum of central control.

Mr. FERNYHOUGH said that if there was extravagance it was a reflection upon the members of the medical and dental professions, because they were the people in whom the Minister must have complete trust. The people had given the scheme a welcome which augured well for the Labour Party's prosperity at the next election.

Sir HENRY MORRIS-JONES said that he had had a letter from a working man in a London hospital in which there was an analysis of the money being spent on the administrative sector of the hospital at the expense of the efficiency and equipment of the staff.

Mr. BEVAN said that if a charge was being made that a hospital was being extravagant, it was the honourable Member's public duty to give its name.

Sir HENRY MORRIS-JONES said that he would be informed of the name in due time. It was no wonder that Sir Frederick Menzies had stated on Dec. 11 [in a letter in the *Supplement*, Dec. 11, 1948, p. 220] that if some drastic steps to reduce hospital costs were not immediately taken those enormous costs might have serious repercussions on the medical services other than hospital work.

Mr. BEVAN asked if the salaries should be reduced.

Sir HENRY MORRIS-JONES said that he suggested nothing of the kind.

Dr. HADEN GUEST said that they should not lay too much emphasis at present on the building of new and expensive buildings for health centres. Rather they should spend their energies on building up teams of doctors. The difficulty was not to get doctors into buildings but to get groups of doctors to work together. He would like to mention that this week in the medical press—in one article in the *British Medical Journal* and another in the *Lancet*—there were reports of staggering progress in medical work. In the *British Medical Journal* there was the account of a series of 5,000 childbirth deliveries without one maternal death. In the *Lancet* there was a description of a new discovery for treatment of Parkinson's disease.

Mr. DAVID ECCLES asked whether they could not cut out some of the waste and get the same services for less with better administration. When the Opposition was accused of not wanting the health services that was not true. They were anxious that the maximum amount of money devoted to the civil estimates should be divided in the best way.

Dr. SANTO JEGER said that the Opposition talked about cost as being the most important factor. He disapproved of that attitude and condemned it. The Labour Party's attitude to life was not based on money, but that of the Opposition was almost entirely monetary.

Mr. W. E. ELLIOT said that the Opposition had been accused of being careless of, or hostile to, improvement in the health of the people. They were perfectly willing to put their record against the record of any other party. Great sections of hospital accommodation were closed because they could not be staffed. The Minister asked for £180,000,000. How many more beds did he expect to open? That was the acid test.

The real danger was that a consolidation of our expenditure at a level away above the level before the war might take place. If the cost-of-living figures were established at something like 95%, or still worse at 300%, as in the case of building, above pre-war the shock to the economy of the country would be profound.

Mr. Bevan's Reply

Mr. BEVAN, after protesting against the absence of Mr. Churchill, said that it had been hard to find out what the Opposition were complaining about. Were they saying that it would have been all right to spend this money in this way if it had gone in the original estimate, or did they object to spending

the money at all? The Parliamentary Secretary did not refer in his speech to the fact that, when they put in the estimate seven months before the money started to be spent, he (Mr. Bevan) had still been in negotiations with practically all the professions—chemists, dentists, ophthalmic opticians, and the B.M.A.—negotiations with whom had not then ceased. Further, the Spens Committee on specialists' remuneration had not reported. How was he to know at that stage what would be the outcome of these negotiations?

When Ministers were in negotiation with sections of the community it was a very serious matter if a Minister in the middle of those negotiations was subjected to pressure lobbies and log-rolling by the sections concerned. He was engaged, or should be engaged, in defending the public interest against the sectional interest with which he was negotiating.

The fact was that he considered without, he thought, much immodesty that the launching of the National Health Service had been one of the greatest pieces of civil administration in the history of all civil government in peacetime. One of the reasons why the Opposition was now running away was because they had already found out that what Mr. Churchill said last Thursday was almost as unpopular among Conservatives as among Socialists.

In future they would have a global budget determined by the regional hospital boards and the management committees of hospitals. Within those global budgets the management committees would have discretion to spend what they wished on this or that item of administration. If they spent more on one they spent less on another. They were trying to work out a system of resilient administration with as little bureaucracy as possible, with as much local self-government as possible, and would at the same time protect the public purse against extravagant administration. They would show the world how they could centralize financial responsibility and decentralize day-to-day administration in a great service of that sort.

The voluntary hospital system had been financially failing. The amount of money they were finding to keep the voluntary hospitals vastly exceeded all the money in their Endowment Fund. It was obviously impossible to know to what extent spectacles and dental operations would be required. How did they know what was going to be the demand?

Whenever they had been able to relieve in any way the burden of suffering of the people of Great Britain the burden had always proved to be heavier than they ever thought it would be. Past conditions concealed a vast amount of inarticulate misery and pain. In so far as those figures represented relief of genuine need everybody ought to be proud of them, but if there was abuse let them co-operate in getting rid of it.

The Service had not been launched in harmonious circumstances; in fact no medical service in the world had ever been launched in harmonious circumstances. Who would have thought that they would have in the Service many more general practitioners than the Government had thought would come in? Who would have suspected that 95% of the population would have registered with general practitioners by the end of the year? Although the financial burden was great they must set off against it the enormous sum of misery already alleviated.

Why did not the honourable and right honourable gentlemen opposite start ceasing to be sour? The Tory Party used to represent itself as a jocund party. However, that had all gone now—pale and miserable lot. Every increase in the health, buoyancy, and vitality of the nation—instead of welcoming it they groaned at it. They hated it because they thought it spelt electoral defeat.

It was necessary that the money be not spent upon the most articulate members of the community, who might be the chemists, the doctors, the dentists, or the ophthalmic opticians, or it might be even the health workers, because each one of those sections was highly organized and able to bring pressure to bear upon Parliament and upon Ministers. He was anxious that the money be not spent on the persons who could organize themselves into loud pressure lobbies and get their columns in the Press, but on the patients who had to make use of the Service. He welcomed the discussion which had taken place. It had shown the hypocrisy of the Opposition and it had shown the soundness of the Service.

The estimate of a supplementary sum not exceeding £52,800,000 was agreed to.

The Raw Opium Regulations, 1948, and the Dangerous Drugs Regulations, 1948, which came into effect on Jan. 1, include amidone and pethidine among those drugs of which a separate register or part of a register must be kept. They specify the preparations of opium which practising midwives may obtain on their own authority, and extend to registered veterinary practitioners the same authority in respect of the possession and supply of dangerous drugs as a registered veterinary surgeon has.

No. 5

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb. 5.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). b) London (administrative county). (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949 (a)	(b)	(c)	(d)	(e)	1948 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	32	1	22	—	1	56	6	20	2	2
Deaths		—	—				—	—		
Diphtheria	116	10	35	10	3	223	19	55	7	8
Deaths	—	—	—	—	—	4	2	2	—	1
Dysentery	75	8	22	—	2	160	28	39	1	—
Deaths				—	—				1	—
Encephalitis lethargica, acute	—	—	—	—	—	—	—	2	—	—
Deaths		—					—			
Erysipelas			39	3	8			45	11	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				48					14	
Deaths	35	1	3	4	1	38	3	9	5	1
Measles*	13,800	496	142	100	178	5,596	511	831	121	17
Deaths†			—	2	—			—	2	—
Ophthalmia neonatorum	39	3	7	—	—	63	5	11	—	—
Deaths										
Paratyphoid fever	4	—	—	—	—	6	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,016	59	20	11	17	1,012	64	14	18	7
Deaths (from influenza)‡	64	13	16	—	2	25	1	3	—	—
Pneumonia, primary			426	33				279	31	
Deaths	311	70		13	12	273	64		21	11
Polio-encephalitis, acute	1	—				6	3			
Deaths										
Poliomyelitis, acute	9	—	1	1	—	25	1	6	—	1
Deaths§	1	—				3	1			
Puerperal fever		1	10				—	7		—
Deaths										
Puerperal pyrexia‖	86	7	13	1	—	118	14	12	2	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,372	83	233	113	50	1,943	110	322	28	42
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	—	—	1	—	12	2	—	8	1
Deaths	—	—	—	—	—	2	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	3,168	176	185	57	84	2,572	172	45	36	10
Deaths	6	—	1	4	—	11	—	—	1	—
Deaths (0–1 year)	303	35	41	37	11	399	53	60	32	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,957	1063	780	205	132	5,191	844	685	224	148
Annual death rate (per 1,000 persons living)			15·6	12·7				13·8	14·0	
Live births	7,292	1108	906	394	208	7,999	1320	954	418	280
Annual rate per 1,000 persons living			18·2	24·4				19·3	26·1	
Stillbirths	195	24	25			240	21	25		
Rate per 1,000 total births (including stillborn)			27					26		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Influenza

In the 126 great towns in the week ended Feb. 12 there were 94 deaths from influenza compared with 64 in the previous week. This figure is higher than that for the corresponding week of 1938, 1942, 1944, and 1948, but lower than the corresponding week of 1939, 1940, 1941, 1943, 1946, and 1947. There have been no definite reports of new outbreaks, but there have been many indefinite reports of a high incidence of upper respiratory disease in certain places.

There is an increased incidence of influenza in Northern Spain but no increase in general mortality there. There has also been an outbreak in the American zone of Germany, in South-west Bavaria, chiefly affecting school-children.

News has been received from Dr. Burnet, of Melbourne, that a strain of virus A recently recovered from the Ocean Islands is identical with the current European strain. All strains fully investigated by the World Influenza Centre, from this country and from the Continent in the first six weeks of this year, are identical.

Discussion of Table

In *England and Wales* infectious diseases were more prevalent during the week, and there were increases in the notifications of measles 2,144, whooping-cough 311, scarlet fever 181, acute pneumonia 81, and dysentery 15. There was a decrease in the incidence of diphtheria 25.

The largest increases in the notifications of measles were Yorkshire West Riding 422, Essex 316, Staffordshire 198, and Devonshire 154; the decline in Lancashire continued, and a fall of 189 was recorded. There was a small rise in the notifications of scarlet fever in every region except the south-western and eastern, where small decreases occurred.

The largest rises in the incidence of whooping-cough were Kent 66, Yorkshire West Riding 46, and Warwickshire 43. The decline in the notifications of diphtheria was mainly due to the experience of Lancashire, where the notifications fell from 39 to 19.

The increased incidence of dysentery was also contributed by Lancashire, where an increase of 26 was recorded. The chief centres of infection in this county were Blackpool C.B. 20; Liverpool C.B. 10; and Whiston R.D. 7. Notifications of acute poliomyelitis were 11 fewer than in the preceding week, and 3 of the 9 cases were notified in Gloucestershire, Bristol C.B.

In *Scotland* there were decreases in the notifications of whooping-cough 52, scarlet fever 39, and acute primary pneumonia 37; the only increase of any size was measles 34. Of the 22 cases of dysentery 13 were notified in the city of Edinburgh.

In *Eire* there were decreases in the notifications of whooping-cough 23 and measles 18. A decrease of 9 in the notifications of diarrhoea and enteritis was reported from Dublin C.B., but this was offset by an increase of 10 in the remainder of the country.

In *Northern Ireland* infectious diseases were more prevalent than in the preceding week, and increases were recorded for measles 39, whooping-cough 20, and scarlet fever 15. The largest increases in the incidence of measles were Belfast C.B. 37 and Antrim County 20. An increased incidence of whooping-cough and scarlet fever was general throughout the country.

Week Ending February 12

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,417, whooping-cough 3,011, diphtheria 148, measles 18,441, acute pneumonia 1,139, cerebrospinal fever 30, acute poliomyelitis 15, dysentery 68, paratyphoid 5, and typhoid 7. Deaths from influenza in the great towns numbered 94.

The first part of an exchange visit arranged by the British Council and the Polish Government began on Jan. 30 when a group of five Polish medical professors came to meet leading members of the British medical profession and visit hospitals and universities. In March a similar group from Britain will go to Poland as the guests of the Polish Government. The visitors are Professor Anton Dobrzanski, Professor of Laryngology and Dean of the Medical Faculty, University of Warsaw; Professor Adam Gruca, Professor of Orthopaedic Surgery, University of Warsaw; Professor K. Jonscher, Professor of Paediatrics, Poznan University; Dr. Tadeusz Kielanowski, Dean of the Faculty of Medicine, Marie Curie University, Lublin; and Professor Semerau Siemianowski, Professor of Internal Medicine, Warsaw University.

Medical News

Medical Fellowships and Fellowships in Chronic Rheumatism

In the advertisement pages of this week's *Journal* the Nuffield Foundation invites applications for medical fellowships and for fellowships in chronic rheumatism. The closing date for receipt of applications is April 1. Full particulars can be obtained from the secretary of the Foundation, 12 and 13, Mecklenburgh Square, London, W.C.1.

Committee on Carcinogenic Action of Mineral Oils

The Medical Research Council has appointed the following to advise and assist them in the prosecution of research on the carcinogenic action of mineral oils: Professor T. Ferguson (chairman); Colonel S. J. M. Auld, D.Sc.; Professor J. W. Cook, D.Sc., F.R.S.; Professor A. Haddow; Dr. J. O. Irwin, D.Sc.; Professor J. R. Squire; Dr. D. L. Woodhouse, Ph.D.; Dr. J. M. Rogan (secretary). In addition the Ministries of Fuel and Power, of Health, and of Labour and National Service have nominated representatives who will attend meetings when matters of interest to these departments are likely to arise.

City of London School Register

A comprehensive register, with biographical details, from 1837 to the present time, of all masters and pupils of the City of London School is being prepared for publication. All former pupils are asked to apply to the editor of the register, City of London School, Victoria Embankment, E.C.4, for a form of questionary. The late Dr. Ernest Hart, a former editor of the *Journal*, was captain of the school in 1851–2.

Dental Technicians' Associations to Amalgamate

The Denture Service Association and the United Dental Technicians Association have decided to amalgamate "with a view to the establishment as soon as practicable of independent status for dental technicians analogous to that already enjoyed by ophthalmic opticians." They have decided to oppose the Bill for regulating the craft of dental technicians.

Oliver Memorial Fund

The committee of the Oliver Memorial Fund intends to make the second award of the value of £50 to a British subject whose original work or service in connexion with blood transfusion is considered to be a notable contribution to the research, organization, or donor aspect of this subject. The committee will welcome applications and, in addition, communications drawing its attention to suitable candidates. All correspondence should be addressed to the honorary treasurer, F. W. Mills, Esq., National Provincial Bank, Ltd., Holborn Circus, London, E.C.1, to whom applications must be submitted by June 30.

Russia Leaves WHO

Soviet Russia, the Ukraine, and Byelorussia have cabled to the executive secretary their withdrawal from the World Health Organization. Their decision is stated to be based on dissatisfaction with the organization's work and the expense involved; its "swollen administrative machinery" is "too heavy for member States to bear." Dr. Brock Chisholm, the executive secretary, has replied, according to *The Times* of Feb. 17, that the telegrams have been received with regret, but that he cannot accept the resignations, for which the constitution of WHO makes no provision.

Beryllium Poisoning

Beryllium poisoning has been added to the list of industrial diseases prescribed under the National Insurance (Industrial Injuries) Act. An employed person who contracts it may claim industrial injury or disablement benefit. In a fatal case death benefit may be paid.

New Medical M.P.

Dr. A. D. D. Broughton, who won the recent by-election at Batley, has been in general practice at Batley since 1931. Dr. Broughton, who is a Cambridge graduate, trained at the London Hospital and subsequently took the D.P.M. at Leeds in 1936 and the D.P.H. a year later. He served in the R.A.F.V.R. as a squadron-leader during the war and has been honorary physician to the Batley and District Hospital for some years. He was honorary secretary of the Dewsbury Division of the British Medical Association in 1936–7 and chairman of the Division in the following year.

Visitor to U.S.A.

Dr. William W. Mushin, of the Department of Anaesthetics, Welsh National School of Medicine, is going to San Francisco early in March as visiting professor of anesthesiology at Stanford University. He will give a course of lectures and attend a conference arranged by the California Society of Anesthesiologists.

COMING EVENTS

Kelynack Memorial Lecture

The second Kelynack Memorial Lecture will be delivered, under the auspices of the Society for the Study of Addiction, by Dr. P. O. Wolff, of Buenos Aires, at the Royal Society of Medicine, 1, Wimpole Street, London, W., on Thursday, March 3, at 5 p.m. His subject is "Problems of Drug Addiction in South America." Admission to the lecture is free.

Officers' Reunion Dinner

The annual dinner for officers and ex-officers of the R.A.M.C. who served in any formation in the Second Army from 1944–5 will be held at Simpson's Restaurant, Strand, London, W.C., on March 3, at 7 for 7.30 p.m. Brig. H. L. Glyn Hughes, C.B.E., D.S.O., M.C., will be in the chair. Dinner jacket or lounge suit may be worn, and tickets, price 21s. (exclusive of wines), can be obtained on early application to Dr. R. Gwyn Evans, 33, Sandford Road, Mapperley, Nottingham, or Dr. R. E. G. Ormrod, 4, Aubrey Road, London, W.

Guy's Hospital Dental School

The annual clinical meeting of Guy's Hospital Dental School will be held in the dental department of the hospital (London Bridge, London, S.E.) on Saturday, March 5, when there will be morning and afternoon sessions. Members of the staff will demonstrate modern dental procedures, and cases of clinical interest will be shown.

Address by Dr. Charles Hill

Dr. Charles Hill will address a meeting arranged jointly by the Crewe and North Staffs Divisions of the B.M.A. at the Town Hall, Crewe, on Sunday, March 6, at 3 p.m. All members in Cheshire, Staffordshire, and Shropshire are invited.

South Wales Medical Ex-Service Association

The South Wales Medical Ex-Service Association will hold its third annual reunion in March. All medical men who have served in either world war are eligible to attend. Owing to the relaxation of certain food restrictions it has been possible to arrange a dinner, and this will be held at Park Hotel, Cardiff, on Saturday, March 5, at 7 for 7.45 p.m., with Colonel J. P. J. Jenkins in the chair. Tickets (12s. 6d. each) may be obtained from the honorary secretary, Mr. Cecil W. D. Lewis, Surgical Unit, Cardiff Royal Infirmary. The unveiling and dedication of the memorial to former students of the Welsh National School of Medicine who lost their lives in the war will take place in a service to be held in the Chapel of Cardiff Royal Infirmary on Sunday, March 6, at 10.30 a.m. The memorial, in the form of a stained-glass window and plaque, will be unveiled by Sir Frederick Rees and dedicated by the Lord Bishop of Llandaff.

Gynaecology Conference

A conference on malignant disease of the female pelvic organs will be held at Newcastle-upon-Tyne on April 1–2 under the auspices of the Departments of Gynaecology and Radiotherapy of the Royal Victoria Infirmary and the Medical School, King's College. The Introductory Address will be given by Mr. Victor Bonney at 5.30 p.m. on April 1, and there will then be a discussion on the treatment of carcinoma of the cervix, at which the principal speakers will be Dr. Malcolm Donaldson, Mr. George Blomfield, and Mr. David Currie. On April 2 papers will be read by Mr. Allan Brews, Dr. A. Glucksmann, Mr. Harvey Evers, and Dr. C. W. Taylor, and there will be a demonstration in the Newcastle Regional Cancer Organization's gynaecological unit at the Queen Elizabeth Hospital, Gateshead. All communications concerning the conference and the names of those wishing to attend should be forwarded as soon as possible to Mr. Stanley Way, Royal Victoria Infirmary, Newcastle-upon-Tyne.

SOCIETIES AND LECTURES

Monday

HUNTERIAN SOCIETY.—At the Mansion House, London, E.C., Feb. 28, 8.30 p.m. *"Personal Experiences,"* Hunterian Oration by Sir Heneage Ogilvie.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, London, W.C., Feb. 28, 4.45 p.m. *"Haem Pigments in Nature,"* by Professor C. Rimington.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Feb. 28, 9 p.m. *"Richard Bright—Before and After."* First Lettsomian Lecture by Dr. Horace Evans.

Tuesday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., March 1, 11 a.m. *"Keratodermia Blenorrhagica,"* by Dr. A. H. Harkness.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, London, W.C., March 1, 5.15 p.m. *"Baroceptor Activity (continued). Quantitative Studies,"* by Dr. A. Schweitzer.

Wednesday

EDINBURGH CLINICAL CLUB.—At Princess Margaret Rose Hospital for Crippled Children, March 2, 4 p.m. Visit conducted by Mr. W. V. Anderson.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., March 2, 11 a.m. *"Skin Diseases of Possible Venereal Origin"* and *"Differential Diagnosis of Genital Dermatoses,"* by Dr. W. N. Mascall.

LONDON COUNTY MEDICAL SOCIETY.—At Dulwich Hospital, East Dulwich Grove, London, S.E., March 2, 3 p.m. Clinical meeting.

Thursday

FACULTY OF HOMOEOPATHY.—At Royal London Homoeopathic Hospital, Great Ormond Street, London, W.C., March 3, 5 p.m. *"Homoeopathy's Way To Recognition,"* by Dr. E. K. Ledermann.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., March 3, 11 a.m. *"Collection of Specimens for Laboratory Investigation,"* by Dr. R. Thomson.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—At B.M.A. House, Tavistock Square, W.C., March 3, 8.30 p.m. *"The Care of the Aged."* Discussion.

LONDON UNIVERSITY.—At Institute of Psychiatry, Maudsley Hospital, Denmark Hill, London, S.E., March 3, 4.30 p.m. *"Physiology of the Vestibular Apparatus,"* by Mr. Terence Cawthorne.

LONDON UNIVERSITY.—At Large Lecture Theatre, St. George's Hospital Medical School, Hyde Park Corner, London, S.W., March 3, 4.30 p.m. Lecture-demonstration: *"Psychiatry."*

LONDON: UNIVERSITY COLLEGE.—At St. Thomas's Hospital Medical School, London, S.E., March 3, 5 p.m. *"Ionic Exchange and Electrical Activity in Nerve and Muscle."* Special University Lecture by Dr. A. L. Hodgkin.

ROYAL PHOTOGRAPHIC SOCIETY: MEDICAL GROUP, 16, Prince's Gate, London, S.W., March 3, 7.30 p.m. *"Somatotyping—Purpose and Method,"* by Dr. J. Tanner.

Friday

LONDON CHEST HOSPITAL, Victoria Park, E.—March 4, 5 p.m. *"Atypical Pneumonia,"* by Dr. Bertram Jones.

ROYAL INSTITUTION OF GREAT BRITAIN, 21, Albemarle Street, London, W., March 4, 9 p.m. *"The Foundation of the Royal Institution,"* by Professor E. K. Rideal, D.Sc., F.R.S. (The Institution was founded on March 7, 1799.)

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh, March 4, 8 p.m. Address by Mr. G. K. M. Hall.

Saturday

KENT PAEDIATRIC SOCIETY.—At Farnborough Hospital, March 5, 2.30 p.m. *"Congenital Heart Disease,"* by Dr. Charles Baker.

NUTRITION SOCIETY.—At London School of Hygiene and Tropical Medicine, Keppel Street, W.C., March 5, 10.30 a.m. *"Nutrition and Fertility."* Speakers, Dr. H. E. Magee, Dr. John Hammond, Dr. A. Walton, Dr. Joseph Edwards, Dr. S. A. Folley, and Professor A. St. G. McC. Huggett.

APPOINTMENTS

Dr. Margaret Suttill, M.B., B.S., who has been on the staff of the British Council since May, 1945, has been appointed Director of the Medical Department in succession to Dr. G. A. W. Angus.

MIDDLEMISS, JOHN H., M.D., D.M.R.D., F.F.R., Director, Radiodiagnostic Department, United Bristol Hospitals.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Feast.—On Feb. 14, 1949, at Birmingham, to Beryl, wife of Dr. R. G. Feast, a daughter.

Semple.—On Feb. 6, 1949, at Middlesex Hospital, London, W., to Dr. Alison Semple (née Cruickshank) and Dr. Robert Semple, a daughter.

MARRIAGE

Bury—Clark.—On Feb. 19, 1949, at Caxton Hall, Westminster, London, S.W., John Duncan Bury, M.R.C.S., L.R.C.P., son of Major F. W. Bury, M.Sc., F.R.I.C., and Mrs. F. W. Bury, of Northam, Devon, to Doris Sylvia Clark, daughter of Mr. and Mrs. John Clark, of Kenton, Middlesex.

DEATHS

Marks.—On Feb. 4, 1949, Urban Marks, M.R.C.S., L.R.C.P., of Bishopston, Swansea, aged 58.

Marsh.—On Feb. 6, 1949, at Greenways, Llanfrechfa, Newport, Mon., Octavius de Burgh Marsh, O.B.E., M.B., B.Ch.

Moseley.—Recently, John Grimson Moseley, M.D., of Jamaica.

Parry.—On Feb. 2, 1949, Griffith Wynn Vaughan Parry, M.R.C.S., L.R.C.P., of Camden House, Bletchingley, Surrey.

Regan.—On Jan. 31, 1949, at Bootle, Peter Leo Regan, M.B., B.Ch., aged 60.

Richards.—Recently, Gwilym Caradog Richards, M.B., Ch.B., Captain, R.A.M.C., aged 25.

Spriggs.—On Feb. 4, 1949, Sir Edmund Ivens Spriggs, K.C.V.O., M.D., F.R.C.P., of Coed Marchan, Ruthin, Denbighshire.

Thoms.—Recently, Geoffrey Surridge Thoms, M.B., Ch.B., Surgeon Commander, R.N.

Tindal.—On Feb. 12, 1949, at Crieff, David Tindal, M.D., F.R.F.P.S.Glas., aged 93.

Witham.—On Feb. 3, 1949, at Church Street Nursing Home, Bath, Ernest Wells Witham, M.R.C.S., L.R.C.P., Major, R.A.M.C. retired, aged 83.

Zane.—On Feb. 7, 1949, at Florence Nightingale Hospital, London, N.W., Mavis Victoria Zane, M.B., Ch.M.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Excretion of Barbiturates

Q.—*What is the rate of excretion of the barbiturates? A recent article states that phenobarbitone is excreted at the rate of only 3% in 24 hours. If this be so, continuous small doses would surely produce a dangerous accumulation in a short time, yet I have known cases in which this drug has been taken regularly for years with no apparent ill effects.*

A.—No single figure for the rate of excretion of the barbiturates can be given. Some barbiturates, such as hexobarbitone or thiopentone, are broken down, chiefly in the liver, and are not excreted as barbiturates at all. Barbitone and phenobarbitone, after ordinary therapeutic doses, consistently appear in the urine unchanged, but even so a part of the dose is destroyed in the body. The part played by the liver in destroying phenobarbitone has been demonstrated in rabbits and cats in the following way. Chloroform anaesthesia, which depresses liver function, is maintained for two hours. Then 24 hours later phenobarbitone is given. It causes deep depression for long periods, and the animals may die from doses which are only half the average fatal dose. Thus damage to the liver by chloroform prevents adequate detoxification of phenobarbitone. Hence, while 3% of phenobarbitone is excreted in 24 hours, a good deal more is destroyed in the liver. The mere fact that some is excreted, however, means that destruction in the liver is far less efficient than it is when thiopentone is given. Since there may be a great difference between individual patients in their ability to detoxify phenobarbitone, it follows that in some people overdosage may easily occur.

Calculi in a Paraplegic

Q.—*A man aged 21 has a complete paraplegia as a result of (?) myelitis in childhood. Although he is lifted occasionally into an invalid chair, he mainly lies flat in bed. As a result he has recently begun to pass softish renal stones, which usually become impacted just inside the external urethral orifice; so far it has been possible to remove them with forceps. Is there any drug or treatment which will prevent the formation of the stones and dissolve those probably already present in either the bladder or kidneys or both? He is incontinent, but gets an erection occasionally.*

A.—Not enough information is given to decide what would be the ideal treatment in this case. It is important to know whether there is evidence of infection of the urinary tract, which is likely in an incontinent patient. Radiology would almost certainly reveal the site of calculi which are already present. The stones are very likely to be composed of calcium phosphate, but it would be useful to confirm this by chemical means. It is clear, therefore, that treatment could be best given in an institution equipped to carry out the investigations. The following regimen should, however, assist in preventing the formation of further stones. (*a*) Four litres of fluid should be taken daily to ensure a dilute urine. (*b*) An acid ash diet should be given with a minimum of milk—a high-calcium diet has been shown to increase the urinary calcium excretion. (*c*) The reaction of the urine should be tested; should it remain neutral or alkaline, regular ammonium chloride should be prescribed to ensure acidification. (*d*) The position of the patient should be changed as frequently as possible. It would be useful if he could be lifted into the invalid chair at least once daily. (*e*) Supplementary vitamins, especially vitamin A, should be given. (*f*) Any coexistent urinary infection should be appropriately treated according to the organism present.

To dissolve stones which are already present the use of the so-called "solution G" of citric acid has been advocated:

R	g.
Citric acid (monohydrate)	32.3
Magnesium oxide (anhydrous)	3.8
Sodium carbonate (anhydrous)	4.4
Distilled water	to 1 litre

As this must be irrigated through a urethral or ureteric catheter, its use would be practicable only if he could be admitted to a well-equipped hospital. Surgery should, of course, be contemplated if any large calculi are shown to be present by radiology.

Keloid

Q.—(*a*) *What is the most recent treatment for keloid and hypertrophic scar following an injury to the elbow and knee in a girl aged 12? The keloid is in the form of a raised scar about the size of a small marble, and there is no tentacle formation.*

(*b*) *A young patient had a boil on her cheek some four months ago. The scar is now healing well and colour is becoming normal, but there is a considerable degree of puckering. What is the most efficient treatment to improve this?*

A.—(*a*) Treatment for keloid formation is as unsettled as it ever was, but most authorities are agreed that preliminary treatment with *x* rays followed by excision and further post-operative *x*-irradiation offer the best chance of success. It should be pointed out, however, that many disappointing results follow the use of *x* rays; years later *x*-ray dermatitis may result. The irradiation should be done only by a competent radiotherapist skilled in this particular work. Excision by itself, while it may be satisfactory, can also be disappointing, the outcome depending on the site of the keloid and its relation to lines of skin tension. A plastic surgeon should be consulted on the advisability of operation. The hypertrophic scar in a girl aged 12 mentioned in the question is a case in point. Keloids are apt to recur in young people, and this is particularly so on extensor surfaces such as those of the elbow and knee. Excision in an adjusted line would probably be advisable. *X* rays would not be likely to help.

(*b*) The scar should be left for at least six months to resolve. If puckering still persists, careful excision by a competent plastic surgeon would be advisable.

Innervation of Uterus

Q.—(*a*) *From what cord level does the sympathetic supply to the uterus come? Does it contain sensory as well as motor fibres, and do these emanate from the same cord level?* (*b*) *Is there a parasympathetic supply to the uterus? If so, what are its function and its cord level?* (*c*) *What is the effect of spinal analgesia and of caudal analgesia?*

A.—(*a*) Knowledge about the innervation of the uterus remains incomplete and uncertain, and the extensive literature dealing with clinical and experimental observations in the human being and animals is confused and sometimes contradictory. Without listing all the issues concerned, it can be stated that the elucidation of this problem is far more difficult than appears at first sight, and most of the following statements should be regarded as general opinions requiring much qualification rather than as facts.

Although it is usual, when innervation is considered, to think in terms of the muscle elements of the uterus, the vascular elements also have an autonomic nerve supply, and this may be important. For instance, the state of the circulation may have some bearing on sensations of pain arising within the uterus. The nerves in question probably accompany and are intimately associated with the main blood vessels to the uterus. As regards the nervous control of this organ, whatever be its ordinary purpose, it is not essential to the process of parturition, and the uterus can empty itself with reasonable efficiency when all nervous connexions are severed. The main sympathetic supply passes to the uterus by way of the superior hypogastric plexus (presacral nerves) and the inferior hypogastric plexus. Stimulation of these nerves is thought to bring about contraction of the circular muscle fibres, particularly those in the lower part of the uterus and upper part of the cervix. Sympathetic impulses therefore tend to hinder dilatation of the

cervix, and the general effect on the expulsive action of the uterus is inhibitory. There is some dispute about whether the presacral nerves carry sensory impulses too, but most authorities believe they do, and this is in part at least the basis of the operation of presacral neurectomy for spasmodic dysmenorrhoea. In a letter to this *Journal* (April 10, 1948, p. 706) Dr. J. Donaldson Craig pointed out, on embryological grounds, that the sympathetic nerves to the uterus are derived from segments D11 to L2, but some authorities have put the level at D5 to D8. It is also possible that some of the sympathetic nerves to and from the uterine muscle accompany the ovarian vessels.

(*b*) The parasympathetic nerves come from S2, S3, and S4 segments, and they reach the uterus by way of the inferior hypogastric plexus. The traditional view is that when stimulated they cause contraction of the detrusor muscles of the upper segment. However, some believe there is no parasympathetic motor supply to the uterus. Sensory impulses, especially those arising in the cervix, also travel through these nerves.

(*c*) The effect of spinal analgesia varies with the level of the nerve block. It probably has to reach L1 or even D11 or D10 before the sensation of a labour "pain" is abolished. With the level of analgesia sufficiently high to permit caesarean section the uterine muscle contracts strongly, sometimes almost in a tetanic fashion, and the uterine wall becomes blanched. Dilatation of the cervix is said to be hindered. This may represent the unopposed action of motor sympathetic impulses. If so, it suggests that sensory nerves are connected with the spinal cord at a lower level than the motor ones. With very low spinal analgesia this strong uterine contraction may not occur.

Caudal analgesia differs from spinal analgesia only in that the analgesic solution is applied to the nerve fibres extrathecally instead of intrathecally. The effects are similar, except that the contraction of the uterus is perhaps less violent and dilatation of the cervix is not significantly impeded. It is not clear why this should be so. Perhaps the height and completeness of the block are less constant, and in any case some observers hold that spinal analgesia does not interfere with cervical dilatation. With either spinal or caudal analgesia the pelvic floor reflex is lost and the patient finds it difficult, if not impossible, to "bear down" in the second stage and to effect delivery.

Varicocele

Q.—*Is there a satisfactory cure or treatment for a male patient of 30 suffering from varicocele, which is causing considerable discomfort? Is operation recommended? If so, what operation, and what are the late results?*

A.—In the ordinary course of events operation for varicocele should be avoided for as long as possible, the condition often being symptomless and the patients introspective in type. If it is causing definite discomfort, presumably from a dragging pain, surgery is advisable. Varicocele can be cured by injection, but the technique is a difficult one and reactions are apt to be severe.

The operation is performed through a small inguinal incision, the cord being exposed as it emerges from the external abdominal ring. The varicose veins of the pampiniform plexus are dissected out. It is wise to leave one or two radicles, as the chances of producing a secondary hydrocele are thereby considerably lessened. Apart from these radicles a length of the pampiniform plexus is excised, and by drawing the cut ends together the testicle is raised to the required extent. The actual length of veins excised will vary from patient to patient and approximately between two and four inches. A scrotal support for the immediate post-operative month is advisable. Late results in well-selected cases are entirely satisfactory.

Risk of Inherited Defects

Q.—*Of three offspring born to normal healthy parents, with no relevant family history, the second had a spina bifida and the third was a mongol. Is there any recognized association between these conditions? Is there any reason for expecting defects in the offspring of the remaining healthy child?*

A.—It is very unlikely that the occurrence of spina bifida and mongolism in this sibship is anything more than a coincidence. Both conditions have some hereditary basis, but other factors, presumably environmental, are relatively much more important, so that familial incidences are very low. Hence the chance that the healthy child will have defective offspring is little if at all greater than would be the case with any random person with no such family history. If the mother is still of child-bearing age, the chance that another child will be deformed is undoubtedly somewhat greater than in a random pregnancy; even if she is elderly, however, it should be no worse than, say, 1 in 10.

Deafness and Tinnitus

Q.—*A patient has had gradually increasing conductive (middle-ear) deafness, due to otosclerosis, for 17 years, and a hearing-aid has been used for the last six years. Would a fenestration operation help her, as there are no obvious changes in the internal ear? What is the prognosis after the operation? She also suffers from severe noises in the head: would the operation relieve this condition?*

A.—If bone conduction for the frequencies 512, 1,024, and 2,048 double vibrations is good, fenestration should help. But the patient should be told that not even the (theoretically) most suitable case can be guaranteed any improvement. In many cases the restored hearing is lost from closure of the new fenestra or from serous labyrinthitis. Tinnitus is relieved in only a minority of these cases, and bromides or barbiturates may be required.

NOTES AND COMMENTS

Ammoniacal Dermatitis in Infants.—Dr. N. R. CARLSON (Pevensey Bay, Sussex) writes: In "Any Questions?" (Jan. 22, p. 164) there is an excellent account of ammoniacal dermatitis in infants. I would like to remark on the success I have had in using acid sodium phosphate (5 gr.) instead of alkalis such as citrate. The ammoniacal smell rapidly disappears, but soon returns if the acid phos. is withdrawn without first correcting the diet. It is a little difficult to explain why the acid phos. works so well. It may be that there is excessive loss of acid in the faeces (as these are always frequent and acid in reaction in this condition), thereby leading to a tendency to alkalaemia and an alkaline urine which cannot neutralize the ammonia being formed by the urea-splitting organisms or ferment. The acid phos. would give a slightly acid urine which could neutralize or buffer the ammonia. As regards the local treatment, I have found that a "sheet" of tulle gras laid over the excoriated area andd usted with boric powder protects the raw area and allows it to heal rapidly.

Fat Intolerance.—Dr. M. D. WRIGHT (London, W.6) writes: Answering a question on fat intolerance in "Any Questions?" (Jan. 22, p. 164) you recommend for vitamin A two tablets daily of carotene, each containing 4,500 units—a total of 9,000 units of carotene, of which rather over half is equivalent in units to vitamin A. In 1945 the vitamin A Subcommittee of the Medical Research Council published in *Nature* (**156**, 11) records of experiments on man in which it was shown that defective night vision and low plasma-vitamin-A values—arising through experimental deprivation of carotene and of all sources of preformed vitamin A—improved in one case promptly on a daily dose of 2,600 i.u. of carotene. In another case the improvement required about five months of the same dose. Too little precise experimental work is recorded on man, but the authors consider that even in the presence of deficiency symptoms 2,600 i.u. carotene is sufficient to cure and 5,000 i.u. enough to provide a reasonable margin of safety. The world shortage of vitamin A sources is still such as to make over-usage undesirable, and the work quoted above gives useful guidance based on critical observations.

Correction.—Mr. E. R. BRANSBY, Ph.D., writes: In our paper on the diet, haemoglobin values, and blood pressures of Olympic athletes (Feb. 19, p. 300) an error inadvertently crept in. It is stated (p. 303) that the average calorie intake of 3,350 daily is about the average need of a man engaged on light work. This should, of course, be moderately heavy work.

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